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ESSAY

ON

THE DELUGE.

Rev. Augustus Matthew Anderson

In practice, "Do unto others as you would they should do unto you !!!"

In matters of faith, endeavour by every means in your power to believe "The truth, the whole truth, and nothing but the truth !!!"

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THE DELUGE.

THE Rev. A. M. Henderson's lecture on "The Deluge" and the public discussion thereon, was the immediate cause of the present paper being written, although circumstances have hitherto delayed its publication.

The subject ought to be considered entirely on its own merits, and without the slightest reference to the writer's belief in other matters, but recent and direct personal experience has shown us that many men as yet are not sufficiently far advanced to act so magnanimously, not to say impartially. Their imperative demand before they will read at all is, What does the writer believe generally, and more especially does he believe in a future state? In reply to this question, therefore, in pure self-defence, as we wish to be read, our answer is—*We firmly believe in the immortality of the soul; that beyond the grave every man will in some all-wise manner be punished or rewarded for the deeds done in the body, and that amongst our other acts the present paper, in proportion to the sincerity with which it is written, will be a source of joy or regret to us in that after life.*

We also firmly believe that it is our duty personally, in common with that of all men, to exercise the powers of discrimination which we possess, however humble they may be—that amongst the hundreds, nay, the thousands, of things which challenge our belief or unbelief, it is our duty to carefully watch, and try to believe only those things to be true which really are true, and those things to be false which really are false. This appears to us to be man's first and most imperative duty—the very foundation of all right action. With these preliminary, somewhat foreign but necessary, remarks, we come at once to our subject by simply informing the reader, that we cannot believe in the Noachian deluge; and the reasons why we cannot, and to which we now respectfully invite his calm impartial attention, are as follows:—

The dimensions of the ark, according to Gen. vi. 15, were—length 300 cubits, breadth 50 cubits, and height 30 cubits. A cubit is the distance from the elbow to the tip of the middle finger, or about one foot and a-half. The ark would be, therefore, 450 feet long, 75 feet broad, and 45 feet high (and this is the almost universally adopted measurement by writers on the subject)—with the exception of the "Great Eastern" it would be the largest ship that ever was built. The first thing that strikes us is the exceeding improbability that men in those times, unacquainted with the arts and with no knowledge of shipbuilding, would have been able to build such a structure as that—such a structure that the accumulated experience of mankind has only just been able to produce one of parallel size, by aid of the best tools, the best workmen, and the greatest engineering knowledge.

But allowing the ark to have been built, Noah was commanded to bring into it two of every kind of animal, beast, bird, reptile, insect, etc.—two “of every creeping thing that creepeth upon the earth,” “of every living thing,” “of all flesh wherein is the breath of life,” seven pairs of all clean animals, and his own family numbering eight persons.

It is difficult in our present state of knowledge to tell with any degree of accuracy the number of land animals existing upon the earth. Authorities differ about even the approximate number, but all admit that it is very great. The compilers of “Black’s General Atlas,” Colenso, Hugh Millar, and others have estimated them as high as half a million. Dick puts them down at 300,000, and others at a different figure. Of course it is impossible to state the exact number, but this much is certain—it is agreed on all hands that the known and classified species amount to upwards of 150,000, and that fresh species are being discovered and classified every day, especially among the smaller insect tribes. Taking then the latter figure as admittedly the lowest, and estimating the unclassified species at the same (which certainly is a low estimate also) we have 300,000 species. For Noah then to have taken a male and female of every kind into the ark, he must have admitted 600,000 individuals, and these we are informed remained shut up in it for nearly a year.

Again, it is very improbable that Noah, 4,000 years ago, would have had a knowledge of *every living animal*, a knowledge which the most intelligent men of the present day, by aid of the accumulated observations of mankind, and by the most laborious research, careful classification, and the great assistance of printing, have not even yet obtained. Further, it is very improbable that had he the knowledge, he would have been able to gather together into one building, say situate in the plain of the Euphrates (where most writers place the building of the ark) from all parts of the earth’s surface, a male and female of upwards of 300,000 species of animals; two of every kind of the wild beast of the desert and the forest; of every kind of serpent and reptile of the rivers and marshes; of every kind of fowl, butterfly, and winged insect of the air; of every kind of caterpillar, worm, vermin, etc., and two of every kind of animal invisible to the naked eye, that peculiarly dwell in the various vegetable and other substances of the earth. For instance, to dwell for a moment on the latter alone, fresh revelations in science daily prove to us that almost every visible object around us—that the food we eat, that the water we drink, the air we breathe, and even our own bodies—teem with innumerable multitudes of living beings, various in form and nature, but invisible to the naked eye. The microscope reveals that thousands of living animals of many species exist in a single drop of water, and in many other substances, are equally numerous and various. An authority before us writing on the subject says:—

“Professor Ehrenberg has discovered a new world of creatures in the infusoria, so minute that they are invisible to the naked eye. He found them in fog, rain, and snow, in the ocean, in stagnant water, in animal and vegetable juices, in volcanic ashes and pumice, in opal, in the minute dust that sometimes falls on the ocean; and he detected eighteen species twenty feet below the surface of the ground in peat-bog, which was full of microscopic live animals. . . . While enquiring into the causes of the cholera which prevailed at Berlin in 1848, Mr. Ehrenberg dis-

covered 400 species of living microscopic animalculæ in different strata of the atmosphere, so that the air is analogous in the distribution of its inhabitants to the ocean, which has marine animals peculiar to different depths. This lowest order of animal life is much more abundant than any other, *and new species are found every day.* . . . Language and even imagination fail in the attempt to describe the inconceivable myriads of these invisible inhabitants of the ocean, the air, and the earth."—*Somerville's Physical Geography*, p. 398.

Respecting the exceeding minuteness of these animals, another authority writes:—

"The microscopic researches of Ehrenberg have disclosed most surprising examples of the minuteness of which organized matter is susceptible. He has shewn that many species of infusoria exist which are so small *that millions of them collected into one mass would not exceed the bulk of a grain of sand, and a thousand might swim side by side through the eye of a needle.*"—*Lardner's Museum of Science and Art*, vol. 6, p. 202.

Another writer speaking of the smaller observed animalculæ says:—

"The size of many bears the same relation to that of a mite as the dimensions of a bee to those of an elephant." (*Encyclopedia Britannica*, Art. "Animacule.") And another authority remarks that some species are known to exist so small that a cubic inch would hold more in number than there are human beings upon the face of the earth.

Thus much has been shewn by scientific men, but notwithstanding the vast, almost inconceivable, power of the best existing microscopes, they fail even by the use of such powerful aids to see a limit to the minuteness and variety of animated beings. Every increase of microscopic power shows *fresh species* of still minuter forms, and the most intelligent microscopists do not for a moment expect by means of the most powerful microscope that man can invent, to be able to find a limit to the minuteness or variety of animal life. The real size of these infinitesimal forms are scarcely realised by our ordinary modes of thinking; but, to make use of a previously quoted, not very scientific, but still familiar figure as an illustration, let us for a moment imagine Noah collecting *a male and female* of species of living animals so small that a thousand could swim side by side through the eye of a common needle. And to fully accord with the evident and entire meaning of the story, he must have collected two and two of every animal, however small, that would drown in a twelvemonth's flood; and, consequently, a vast number of those small animals to which we have just referred. Let us fancy to ourselves a man collecting a male and female of 200,000 species of insects, the great majority of which are invisible to the naked eye, and many of which cannot be seen except when artificially magnified a thousand, ten thousand, a hundred thousand, or a million of times, and then only just as the smallest perceivable point. Besides, the vast memory it would require to be certain that no species was collected twice over and none omitted, the amount of knowledge and acute preception required to be able to discriminate and collect just one male and one female of this vast number, is almost inconceivable. Certainly in this advanced age of the world, by aid of the results of vast laborious research, the most careful classification, and the thousand other valuable aids of advanced science, it is a task that no man, no thousand men, not the whole

scientific men of the world, could perform ; not even were the accumulated knowledge on the subject of the whole human race concentrated in their persons. True, it is argued, by some that Noah did not collect the animals, but that they came to him into the ark of their own accord. It may be remarked here, in explanation, that certain portions of the Pentateuch, especially of the first chapters of Genesis, have been shown by late commentators to consist of two versions of the same or similar traditions, blended together by some later compiler or editor, so as to form a species of double or parallel history. The chapters recording a deluge are particularly of this class ; in fact, so much so that two almost distinct narratives can be made out of the document, and this may account for the fact, that while in two places the language seems to imply that Noah was to collect the animals as he was to collect their food, in other two places it says that they came to him to be taken in. But even for the sake of argument to concede the point, and allow that they had given to them an irresistible impulse to travel from their native homes, from the tropics, the polar regions, or whatever part of the earth it might be, and place themselves under Noah's care, the difficulties seem almost equally great.

For instance, many of the inhabitants of the tropical and polar regions could not have existed in the latitude of the ark. Some of the smaller insects, whose length of life does not exceed two or three days, and in the case of some species two or three hours, if they had travelled with the speed of a railway carriage, or even that of a cannon ball, from some parts of the earth, they could not have reached the ark in the term of their natural lives. Again, many animals travelling such distances would have been liable to innumerable casualties from want of food, excessive fatigue, destruction by others, etc. Many land animals indigenous to the various islands of the earth, would have had to cross hundreds, and others even thousands of miles of sea to reach the ark. Animals peculiarly indigenous to the south polar regions must have passed through the burning tropics, as well as over vast oceans of water, and in some cases deserts of scorching sand to reach it.

To impress the case more on the mind, let us by way of illustration, just imagine a couple of animals, say of the snail or the grasshopper tribes, peculiarly indigenous to that far southern island Terra Del Feugo, starting for the valley of the Euphrates. If they travelled the nearest way, they would have first to cross over 5,000 miles of the Atlantic Ocean, battling with the salt waves and the fish of prey ; then across 2,000 miles of the tropical deserts of Africa, with its myriads of ants and carnivorous insect tribes ; then over the Red Sea, and across the deserts of Arabia into Mesopotamia, a distance altogether of upwards of 8,000 miles. But taking it the other way, so that the least possible distance of water would have to be crossed, and the difficulty is equally great, if not greater ; they would first have to cross the Straits of Magellan, then over the entire continent of America up to the Arctic Circle, a distance of 8,000 miles ; then across Behring's Straits and over 6,000 miles of the Asiatic continent. It is manifestly absurd to remark that such a journey for such animals is exceedingly improbable, and yet such is the journey that pairs of animals of many thousand

species must have made to have reached the ark from the country in which they were peculiarly indigenous, to literally agree with the account in Genesis, that two of every kind that "breathed," or "creeped," or "moved upon the earth" went into the ark.

Again, it is said in Genesis vi. 21, 22, that Noah gathered together every kind of food that was eaten to sustain the life of those in the ark while the flood lasted. Now it is certainly very improbable that Noah would have been able to collect together into the ark from the plains, valleys, mountains, jungles, rivers, swamps, deserts, and crevices of the earth, from the equator to the poles, over which the various kinds of food eaten were spread. And it is equally improbable that he would have been even acquainted with all the various kinds of food that were eaten by the entire animal kingdom, a knowledge not yet attained, nor nearly attained by the first scientific men of the day, after years of laborious research, and by aid of the accumulated observations of mankind. The various kinds of food already known to be eaten by the animal kingdom are of a startlingly immense variety; modern scientific researches have demonstrated that an immense variety of the vegetable kingdom serves as food for minute animals, and it is highly probable that there is not a single species of plant, not a single representative of the vegetable kingdom, but is eaten by some animal or other. Nay, more, reasoning by analogy from similar and extensive observations of scientific men on the animal kingdom, it is very questionable whether there is a single animal, even down to the smallest perceivable by the most powerful microscope, but is eaten by some other animal. For the account in Genesis then to be literally true, Noah must not only have collected together into the ark a male and female of every kind of animal that "breathed," or "creeped," or "moved upon the face of the earth," but he must have collected also, in addition, every representative of the animal and vegetable kingdom to serve as food for them. In other words, he must have collected simply for the purposes of food, a portion at the very lowest estimate, of 200,000 species of plants, and 300,000 species of animals, a work which would require an amazing memory, a discriminating knowledge, and an activity certainly unexampled in the world's history. A thousand of the first scientific men of the present day would not be competent to such a task. Again, Noah must not only have collected them together and their food in a simple manner, but for many species which live only in the sap of trees, in green leaves and pulpy vegetable bodies, he must have gathered, and kept such vegetables in a growing state in the ark. Many species of animals only exist in the bodies of other animals, and exist there only by the destruction of the bodies of such animals, and in a few weeks or months undergo metamorphosis, and then live upon different food. Noah must have known all this, and prepared for it accordingly. Many species of animals appear to exist in and upon the bodies of certain other peculiar animals, in various diseases, etc. As instances of this there are various species of worms, head and body vermin, the itch and scurvy insects, etc., on the human body, ticks, animal lice, the mange, the scab insects, etc., upon various animals. For the account in Genesis then to be literally true, it is questionable whether we must not conclude that

the eight persons in the ark must have supported upon their bodies a male and female of every species of loathsome insect that is at any time peculiar to the human body, and that every other animal on board must have supported representatives of all the vermin that at any time lived upon the bodies of their species.

Again, in a universal flood, in which all the salt and fresh water of the globe commingled together, it would have been impossible for the fresh water fish to have lived. Noah, therefore, must have provided water accommodation for them on board, and supplied them with their appropriate food, and have done the same with respect to all the fresh water amphibia of the earth, who would have been unable to live for a year in a universal deluge of salt water. Again, fresh water would be required for the consumption of all the land animals in the ark, as the waters on which the ark floated would be salt. This would have to be stored away at first, or caught during the forty day's rain, and in either case, the quantity required for twelve months' consumption for such a vast quantity of animals must be enormous, and would well nigh freight the ark itself.

But allowing for the sake of argument that the ark is built, that Noah and his family, and two of every kind of animal, and the necessary food and water for them all, are stowed away in it and shut in. Now let us examine the interior arrangements, and to do so properly, we must revert to the description of the ark; it was (reckoning the cubit at $1\frac{1}{2}$ feet) 450 feet long, 75 feet broad, and 45 feet high, divided into three stories; each story, according to this measurement, would comprise an area of about three quarters of an English acre; it had one door in the side, and one window in the top, $1\frac{1}{2}$ feet square, both of which we are informed were closed. The first difficulty that we meet at this stage, is that all this vast accumulation of living animals would be involved in total darkness until Noah opened the small window again at the end of eleven months, and it is very unlikely that all kinds of animals could exist for eleven months deprived of a thing so necessary to the healthy action of the vital functions as light. Again, according to the natural laws of inspiration and respiration, they would all have been smothered in less than twenty-four hours, and many of the inhabitants of the lower story in less than an hour. But admitting for the present, to pass on, that there was light in the ark, and that breathing was possible, we will suppose that the above estimated 600,000 animals were distributed abroad over the three floors of the ark, their food stored, and all under the superintendence of Noah, his wife, his three sons and their wives, who, according to the account were all upwards of a hundred years old, and allowing that the animals were fed and watered once a day, each man and woman of the eight persons, if they kept on for twelve hours each day, and every day that they were in the ark, they would have to feed of all sorts and sizes 833 animals per minute, of upwards of 400 different species, and that with more than 200 kinds of food, and not only would they have to feed all this number of animals, but in addition, they would have to feed until they were required for consumption, all those animals which were to serve as food for the carnivorous animals on board. It has been said that carnivorous animals could

in a case of necessity exist upon vegetable food, and that all that Noah had to do was to collect a sufficient quantity of vegetable food to serve the necessities of every living animal, but this suggestion does not meet the difficulty. True, some few carnivorous animals would, if starving, eat vegetable food and preserve their lives for a time, but the great majority of them would die sooner than eat anything but animal food; and besides the account expressly says that Noah took into the ark all food that was eaten to serve for the period required. (Gen. vi. 20, 21).

We shall next take a glance at the animals themselves. The natural disposition of carnivorous animals is to tear each other in pieces, and also to tear and devour the timid, herbivorous animals, and it seems very improbable that the lion and the sheep, the cat and the mouse, the eagle and the dove, deadly serpents of all kinds, etc., would lie down peaceably together for a year. Again, in obedience to the laws of their nature, all the animals in the ark would have had sexual intercourse with their kind; this amongst the smaller animals, and especially the insect tribes, would have swarmed the ark with young. Many thousands of small animals whose length of life does not exceed a few weeks, days, or hours, would according to their nature have died of old age; great numbers of the various animals that are shut up in the menageries of the present day die within the first year, although tended by men who make the instincts, dispositions, and entire natures of animals their life's study, and take the most solicitous care of them. And it is very improbable that Noah would be more fortunate with such an enormous and heterogeneous collection as it is asserted went into the ark. Again, all animals, even under the most favorable circumstances, are subject to general mortality. Perhaps under ordinary circumstances, taking the animals in the ark, large and small, 300,000 out of 600,000 estimated under ordinary conditions, and in accordance with the law of their being, would have died within the year; but the account in Genesis in the most positive manner implies that not a single creature died from old age, sickness, or any other cause whatever.

The next thing we shall consider is the sanitary regulations we have already referred to, the deficiency of ventilation and light. The amount of fresh air and light that could come in through the single door and the single window of a foot and a-half square would be small indeed; but the account says that even these were closed, in fact the authorised notes of the Douay Bible say that they were not only closed, but like all the rest of the structure pitched within and without; that when they were closed Noah pitched the crevices on the inside, while an angel pitched them on the outside; but however this may be, the account in Genesis evidently implies that they were closely shut.

Another objection is that the quantity of solid excrements and urine that according to the general operations of nature would come from this number of animals in upwards of a year would be enormous, and would of itself breed such a pestilence that few animals could survive it; it must in an ordinary way have covered the floors to a considerable depth. What if it did not swamp the animals in the lower story altogether, certainly it would be impossible for the eight human beings on board to keep it clean, as they would have their time fully and more than em-

ployed in feeding the animals; for if they could stand the stench of the accumulated and united excrements of representatives of the entire animal kingdom, wade through it, and feed 800 animals per minute, for twelve hours each day, they must have been hardier than human beings at present existing, or any recorded in reliable history. The mythical Hercules himself could scarcely have been competent to such a task. But again, they could not clean out the excrements, even had they the leisure, the power and the will, as the only window and door were closed; even if the window was not closed it would be more labor than that number of persons could accomplish to sweep and gather it all up, bring it from all parts and put it through the window in the top of the vessel; it would be impossible to put it through the side, as with the immense freight on board the top of the ark would be near the edge of the water if not underneath.

Another matter, although not so great a difficulty as the preceeding ones, may be incidentally mentioned here: it is respecting Noah's proceedings to ascertain if the waters had dried up from off the earth. It is said in Gen. vii. that about the beginning of the tenth month of the flood he opened the window of the ark and sent out a dove to see if the waters were dried up from off the earth; that finding no place to rest her foot because the waters still covered the whole earth, she came back, and Noah put his arm out of the window and pulled her in; that he stayed another seven days and sent her out again, and she came back in the evening with an olive branch in her mouth, which she had plucked off, and by that Noah knew that the ground was dry, and after seven days he sent her forth again, but she came back no more, and a few days after that Noah *removed the covering of the ark and looked, and behold the ground was dry.* Now this reads much more like a legend than real history; in a general way, if a dove was simply put out of the window of a building that contained her mate, she would not leave it at all, but according to the account this dove acted like a rational being on behalf of Noah. In the first place she comes back to inform him by implication that the waters still prevailed, in the second place she comes back with a branch which she had plucked off to inform him that the waters had dried up, and in the third place she keeps away altogether to confirm the information. Now to us, this, as we have seen elsewhere remarked, reads very like a "childish legend or fairy tale." The mere fact that a bird flew away and did not come back, although it would be a species of presumptive evidence, yet would not prove to a certainty that the earth was dry; as the bird might have met with some accident; and in the next place no man of ordinary intelligence of the present day, or even of the past as history portrays him to us, were he placed in the position assigned to Noah, would think of sending a bird out to see if the ground was dry, he would simply open the window and look out himself. This strange proceeding of Noah does not of course of itself prove the account to be false, but we are bound to be guided in our beliefs by the general probabilities of a story; and the probability is, that nine hundred and ninety-nine men out of a thousand, if placed in similar circumstances to those ascribed to Noah, would not only have looked out, but from the top of the ark would have been anxiously waiting for, and watching the gradual subsidence of the water and drying up of the earth.

But to return to the closer argument, and allowing for the sake of such argument that the flood has taken place—that its waters during subsidence have deposited the ark with its immense menagerie, safely, and in an upright condition upon the top of Mount Ararat, and here fresh difficulties await us. In the first place the top of Mount Ararat is covered with eternal ice; it is, according to the physical geographies, 17,000 feet above the level of the sea, which in that latitude would be at least 3,000 feet above the line of perpetual snow; and although an unusual flood which would cover the mount would considerably equalise and lower the temperature by the currents of water, and by the dense atmosphere of the lower portions of the earth being borne upon its surface, yet as soon as the waters receded the usual temperature would return and the top of Ararat would again become one large block of ice; and consequently as soon as the ark was opened, if not before, at least all the animals from warm countries would die, and even vast numbers of the more delicate of the others be frozen to death. Again, there is another difficulty respecting the great steepness of the mount. So difficult is the ascent that no living being was ever known to ascend it until the year 1829, when Professor Parrot announced that he had succeeded in reaching its summit; but so impossible of execution was his feat thought, that it was not credited by the people living in the country around. (*Kitto's Pictorial Bible*, p. 26). Another writer speaking of its steepness, says:—

“So exceedingly difficult of access is it, that it is doubtful whether, since the deluge, anyone ever succeeded in reaching its summit till the year 1829. Indeed it is an article in the creed of the Armenian church that its ascent is impossible.”—*Hitchcock's Religion of Geology*, p. 124.

It is urged by some, to get over the difficulty of the ark resting on Mount Ararat, that the Bible does not expressly say the mount, but the mountains of Ararat. This is quite true, but the highest mountain is evidently implied, as the story informs us that the ark grounded on a given date, (Gen. viii. 4,) that the waters “continually decreased,” that about two months and a-half later the tops of the mountains were seen (Gen. viii. 5,) and two months later the face of the earth was dry (Gen. viii. 13.) This evidently implies, according to the fairest criticism, that the ark grounded on the highest mountain summit, that the waters continually decreased, that in ten weeks the tops of the lower mountains were seen, and in two months more the face of the entire earth was dry. To us it appears absurd to suppose that the writer of the account intended to convey the idea that after the ark grounded, it took ten weeks for the waters to subside the few feet which constituted the draught of the ark, so that the other mountain tops of a like elevation with that on which the ark rested could be seen, and that in only two months more it subsided many thousand feet, so that the entire ground was dry. The reasonable reading of the story evidently is, that from first to last the waters continually and gradually subsided. Besides, from time immemorial believers have universally pointed to Mount Ararat as the veritable mountain on which the ark rested, a fact which we firmly believe, in short, will venture to assert, would have never been called in

question, had not scientific difficulties rendered the faith untenable ; and even now, although some of the more advanced thinkers see the difficulties of the position and argue accordingly, yet the great bulk of the Christian, the Jewish, and the Mahometan world still believe it. The Catholics, the largest body of believers in the Noachian deluge in the world, still hold that it did rest there. Dr. Calmet in his Theological Dictionary, has what he terms "The Calender of the Melancholy Year, a.m., 1655," and one item in it is "April 17, the ark rested on Ararat in Armenia."

But, to proceed, admitting the difficulties of the temperature and of the descent from the mountain or mountains of Ararat to be overcome, and in a few hours the low lands to be reached in safety, here a fresh class of difficulties meet us. Consequent upon a twelve month's flood of salt water covering the ground, the earth is a barren desert, there is not a single plant living throughout the wide and dreary expanse upon which the preserved creatures are to subsist. Some few seeds and roots may have preserved vitality in the water for the year ; but the vast majority will have utterly perished. The land would be deeply saturated and encrusted with salt, and consequently would not for a great length of time be in a condition to grow a great many kinds of plants which would be required for food for the various animals. But allowing all this, and that they are planted, it will take some months for the fastest growing vegetables, and in the case of trees, some years, before they are grown and ripe for food, and upon what are the animals to subsist meanwhile. But leaving the difficulty of the immediate want of vegetation, upon the coming out of the ark another one equally as great follows ? One-fourth of the entire number of animals is carnivorous, and requires other animals to eat if they follow their natural instincts, and would at once seize upon the herbivorous animals ; they would supply them with food at most but for a few days, and they in their turn must die for want of more to eat, and then the whole animal race which had been for twelve months so carefully preserved would be annihilated. If on the other hand, they did not follow their natural dispositions, but patiently waited for something to eat, until flesh could in the natural order of things, have been grown and spared them ; without prejudice to the permanent existence of the herbivorous species, some of them would have had to wait months, and others even years before a single meal could have been supplied to them. Certainly it would have been many months before such large animals as the lion, tiger, hyena, and crocodile could have obtained a single meal without endangering the existence of the herbivorous species of animals upon which these animals live.

The next thing which we shall consider is the water with which the world is said to have been drowned. The amount of water necessary to deluge the world above the tops of the highest mountains, some of which are five miles above the sea-level, would be enormous. Dr. Pye Smith (*Geology and Genesis*, p. 140) says that the quantity of water so required "*might be fairly calculated as amounting to eight times that of the seas and oceans of the globe.*" And Professor Hitchcock (*Religion of Geology*, p. 115) admits this estimate to be a fair one. Now the question arises, whence came this water, and where did it go to ? The

account says, that the flood was caused by a forty days' incessant rain from heaven, and the breaking up of the fountains of the great deep. The idea wished to be conveyed by the words breaking up of the fountains of the great deep, we shall leave until we come towards the end of this article, to glance at the general notions of most rude people on the causes of natural phenomena, and which beliefs, we feel convinced, and shall attempt to show, played a considerable part in the construction of the story of the flood generally. The forty days' rain being a more definite idea, and consequently more readily and certainly understood than the other, we can more satisfactorily answer that by the aid of physical science, and shall at once attempt to do so, leaving also to be noticed farther on, the notions of most rude people respecting the phenomena of rain—whence it comes, etc. The child and the uninformed of every country, may and do imagine that it is possible for rain to fall, and in time, to deluge the earth, but the man acquainted with the simple elements of science knows that this is impossible. Science demonstrates in the most satisfactory manner, that if the atmosphere round the entire globe were completely saturated with watery vapor, it would not contain sufficient to form a sheet of water over the entire face of the earth of a foot in depth. On this point we shall quote a couple of unexceptional authorities. Dr. Pye Smith (*Geology and Scripture*, p. 140) says:—

“Were we to imagine the air to be first saturated to the utmost extent of its capacity, and then to discharge the whole quantity at once upon the earth, that whole quantity would bear a very inconsiderable proportion to the entire surface of the globe. *A few inches of depth would be its utmost extent.*”

Sir John Leslie, (*Discourse on the Progress of Mathematics*, *Enc. Brit.* vol. 1, p. 150) says:—

“Supposing the vast canopy of air, by some sudden change of internal constitution, at once to discharge its whole watery store, this precipitate would form a sheet *of scarcely five inches over the surface of the globe.*”

See (Colenso, vol. 4, p. 198). Every one acquainted with meteorology is aware that rain is caused by the condensation of aqueous vapor suspended in the atmosphere which has arisen from the earth by evaporation; if this vapor were all condensed and precipitated upon the earth, then there could be no more rain until more vapor arose from the surface of the earth to cause it. Were it therefore to rain for forty days over the entire surface of the globe, it would not raise the water upon that surface a single foot, not even a single inch, *because before the water could come down it must first go up.* That the world should be drowned by rain, therefore, however feasible and probable such a thing might appear to a child or an uninformed person, one acquainted with the simplest elements of science, with the plainest laws of meteorology, is compelled to pronounce such a thing according to these laws impossible.

Many ways have been suggested to meet the water difficulty, every one of which has been utterly inadequate to account for it. We have not space to specify a number of these, which we cannot but characterise as attempts to prop up a weak cause by the most futile and absurd reasoning, but as specimens of such reasonings we shall just give two instances from authorities of considerable standing. Dr. Clarke in his commentary on

Gen. vii. 11, attempts to lighten the difficulty by supposing that the atmosphere might have been turned into water. His own words are:—

“A multitude of facts have proved that water itself is composed of two airs, oxygen and hydrogen, and that 85 parts of the first and 15 of the last, making 100 in the whole, will produce exactly 100 parts of water. And thus it is found that these two airs form the constituent parts of water in the above proportions. The electric spark, which is the same as lightning, passing through the airs, decomposes them and converts them into water. . . . God, therefore, by the means of lightning, might have converted the whole atmosphere into water for the purpose of drowning the globe, had there not been a sufficiency of merely aqueous vapors suspended in the atmosphere.”

But the Doctor makes a great mistake when he supposes that atmospheric air is composed of the elements of water. The elements of water are as he correctly states, oxygen and hydrogen, but the elements of the atmosphere are oxygen and nitrogen, and would if chemically united form not water but one of the five oxides of nitrogen; the first of which is laughing-gas, and the last is aqua-fortis. But even supposing the components of the atmosphere to be oxygen and hydrogen, instead of oxygen and nitrogen, yet its weight is but about 45 pounds to the square inch, and consequently would not, if precipitated, form a body of water more than about 30 feet in height, while the height of the loftiest mountains on the globe is nearly thirty thousand feet. Again, allowing that the atmosphere was composed of the elements of water, that electricity caused them to chemically unite, form water, and fall upon the earth. This fact alone, would originate another enormous difficulty. It would annihilate the atmosphere as air, and according to natural law, all in whom was the breath of life in the ark, would immediately die for want of air to breathe. In any case this certainly appears to us a most absurd mode of searching after water, and shows to what extreme and illogical arguments men will sometimes resort, sooner than give up a cherished dogma when pressed with overwhelming evidence against its truth.

A different, but equally absurd argument is used by another writer to the following effect; he states in the most confident manner that the world could have been drowned by the expansion of the present oceans, caused by the application of a slight increase of heat. Everyone is acquainted with the fact that water is slightly expanded by the application of even a moderate degree of heat. To explain the idea by a familiar illustration—if a kettle or pot is filled completely full of water, and put upon the fire some times before it boils a small portion of it will swell over consequent upon its slight expansion by the heat. This fact of the expansion of water by heat, seems to have been seized hold of by some ingenious person as a happily discovered water supply, and he assures us that if the waters of the ocean were raised only to about blood heat, they would swell up sufficiently to deluge the world above the tops of the highest mountains. His own words are:—

“A further progress in mathematical and physical knowledge has shown . . . that the mere raising of the temperature of the whole body of the ocean to a degree no greater than marine animals live in, in the shallow seas between the tropics, would so expand it as more than to produce the height above the mountains stated in the Mosaic account.”

Absurd as this idea is, requiring, according to the reasonable estimate of Dr. Pye Smith and Professor Hitchcock, all the water of the globe to expand into eight times its present bulk, and being in no way countenanced by the story of the flood itself, yet it is adopted and sent out for the edification of the masses in such works as "*Watson's Biblical Dictionary*," (Art. "Deluge)," and "*Gardner's Christian Encyclopedia*," (Art. "Deluge)" and in both of them is accompanied by the following comment:—

"As to the deluge of Noah, therefore, infidelity has almost entirely lost the aid of philosophy in framing objections to the Scriptures."

Now, in the first place, we must question the charity, the fairness, and in fact the general propriety of calling all those who cannot conscientiously believe in its entirety, the account of the Noachian deluge by the opprobrious name of infidel; and secondly the statement that at the present day, philosophy has scarcely any objections to urge against the account. For there certainly never was a time in the world's history when so many scientific objections were urged against the story as it stands; objections which with the advance of scientific discoveries are continually increasing in number and magnitude; and which by the sheer force of, and in many cases unwilling conviction, are being urged by the most eminent men of the scientific world.

But to proceed with the examination of the story, the next question that occurs for our consideration is, where did all this vast quantity of water go to; the account says that a strong wind passed over the earth and it dried up. Dr. Clarke in his Commentary on Gen. viii. 1, in explanation and confirmation of this passage, says:—

"It was such a wind as produced a strong and sudden evaporation. The effect of these winds, which are frequent in the East, is truly astonishing. A friend of mine who had been bathing in the Tigris, having on a pair of Turkish drawers, one of these hot winds, called by the natives Samiel, passing rapidly across the river just as he had got out of the water, so effectually dried him in a moment, that not one particle of moisture was left either on his body or on his bathing dress. With such an electrified wind as this, how soon could God dry the whole of the earth's surface."

That very hot, sometimes almost fiery blasts of wind do frequently sweep across parts of certain Eastern countries, arising from the sun's action upon the surfaces of parched, rocky, and sandy plains in those or the neighbouring countries, is patent to every traveller in the East; but these winds are easily and certainly accounted for—are always local, and are never in any case materially felt over the whole globe, or a thousandth part of it. But allow such a wind, as hot and as strong as at any time blows on any part of the earth's surface to blow over every part of the world; and it could not according to the natural laws dry up a thousandth, or a ten thousandth part of such a body of water as is represented in the account.

As we have before shown, the atmosphere is not capable of holding in suspension more than a few inches of water at a given time, therefore when the air is once saturated with water, some of it begins to fall again, and must fall before any more can rise from the earth. Get the winds then as strong and as hot as you will, and the faster the water goes up the faster it will come down again, and in one, or one thousand years, not one foot of water will dry up off the surface of the earth.

Another objection to the story is, that if the ark was built in the plains of Mesopotamia (the position universally ascribed to it both by the ancients and the moderns), it could not according to known laws, have grounded on Mount Ararat at the end of five months. On this point Dr. Pye Smith, (*Geology and Scripture*, p. 154, 155) remarks :—

“ Its form was adapted to secure slowness of motion so that it should float as little a distance as possible from the place of human habitation, but by the action of the sun upon the atmosphere, currents would be produced by which the ark would be borne away in a southerly, and then in a westerly direction. To bring it back into such a situation as would correspond to its grounding in Armenia or any part of Asia, it must first circumnavigate the globe. But this was impossible in the time, even if it had possessed the rate of going of a good sailing vessel.”

Another species of evidence against the literal truth of the story is manifest in the monumental sculptures of Egypt. They shew most distinctly that an uninterrupted civilisation existed there, extending thousands of years farther back than the asserted deluge of Noah. On this point Nott (*Types of Mankind*, p. 211) writes :—

“ When Egypt first presents itself to our view, she stands forth not in childhood, but with the maturity of manhood, age, arrayed in the time-worn habiliments of civilisation. Her tombs, her temples, her pyramids, her manners, customs, and arts, all betoken a full-grown nation. The sculptures of the sixth dynasty, the earliest extant, show that the arts of that day, some 3,500 B. C., had already arrived at a perfection little inferior to that of the eighteenth dynasty, which, until lately, was regarded as her Augustan age.”

And again, (page 237) he says :—

“ Bas-reliefs beautifully cut, sepulchral architecture, and the engineering of the pyramids—reed pens, inks (red and black), papyrus paper, and chemically prepared colors ; these are grand evidences of civilization of the Memphis, (the Capital of Egypt) 5,300 years ago, that every man with eyes to see, can now behold in noble folios, published by France, Tuscany, and Prussia.”

The sculptures above referred to of the reign of Menes of the sixth Dynasty, according to the united testimony of Humbolt, Bunsen, Kenrich, Lipsius, and Hinks, show an antiquity of at least 3,400 B. C. while, according to the Bible chronology, the date of Noah's deluge was less than 2,400 B. C. (See *Colenso on the Pentateuch*, vol. 4, p. 274). And if we allow a reasonable time for Egypt to become sufficiently populated to form a kingdom in the first place then for five dynasties to become extinct, and another established, and if we find that the sixth dynasty was in existence more than 3,400 years before the Christian era, we may reasonably suppose that Egypt must have been first inhabited at the least, from 4,000 to 5,000 years before such era. Some eminent men have concluded from certain data, that there is a strong probability that it was inhabited 8,000 years from the present time, but even the lowest of these figures which are founded upon the most satisfactory evidence, emphatically exclude the idea of a universal deluge in which all mankind was destroyed 4,000 years ago.

If we turn to the science of Geology, it instead of supplying evidence of a universal flood having taken place 4,000 years ago, demonstrates most incontestably that such a flood did not take place. Although perhaps geology is most general and convincing in its evidence against the

account, we shall not go largely into this part of the subject, but shall just instance two or three points which appear to us most conclusive. The first is, that we might have reasonably expected that a flood which was universal for nearly a year, would have left behind it geological evidence of its having taken place; that there would have been a deposit of the remains of all the existing species of animals, and especially of fish, marine plants, etc., commingled together in drifts, in caves and other places favorable to the preservation of such remains throughout the world. Geology tells us that there is nothing of the sort, that although in the long lapse of ages, extending over a period of millions, and hundreds of millions of years, there have been innumerable partial deluges at different times, in different parts of the world, and that many parts have been submerged and elevated many times in succession, and bear evidence of such successive changes by the various fossil remains of both land and marine animals, and vegetables, in some cases of extinct species, and in others of extinct, together with existing species, yet there is no evidence of this kind that points to a simultaneous deluge throughout the world; and which there certainly would have been had it taken place. In fact, so forcible is the presumption, that such a flood would have left fossil and general geological indications of its having taken place, that some of the most persistent believers to get over the difficulty have even suggested that *God has wrought a special miracle to obliterate all such evidences*. To cite instances in point, the Rev. Alfred Barry, in his "*Introduction to the Study of the Old Testament*" and Dr. Kitto in his "*Encyclopedia of Biblical Literature*," Art. "Deluge" each argue in this way.

A second geological objection, a very strong one, and one we believe now allowed by all the principle writers of every shade of opinion on the deluge is, that respecting the accumulated heaps of pumice, and other light refuse of extinct volcanoes having remained undisturbed for many thousand years, and which would most certainly have been swept away in a universal deluge. A number of unexceptionable authorities could be quoted on this point, but as our space is limited one must suffice, Hugh Miller (*Testimony of the Rocks*, p. 341, 342) says:—

"The cones of volcanic craters are formed of loose incoherent scorice and ashes; and when exposed, as in the case of submarine volcanoes, such as Graham's Island and the islands of Nyoe and Sabrina, to the denuding force of waves and currents, they have in a few weeks, or at most a few months, been washed completely away. And yet in various parts of the world, such as Auvergne in central France, and along the flanks of Etna, there are cones of long extinct or long slumbering volcanoes, which though of at least triple the antiquity of the Noachian Deluge, and though composed of the ordinary incoherent materials, exhibit no marks of denudation. According to the calculations of Sir Charles Lyell, no devastating flood could have passed over the forest zone of Etna during the last twelve thousand years,—for such is the antiquity which he assigns to its older lateral cones, that retain in integrity their original shape; and the volcanic cones of Auvergne, which enclose in their ashes the remains of extinct animals, and preserve an outline as perfect as those of Etna, are deemed older still. Graham's Island arose out of the sea early in June, 1831; in the beginning of the following August it had attained to a circumference of three miles, and to a height of two hundred feet; and yet in less than three months from that time the waves had washed its immense mass down to the sea level; and in a few weeks more it existed but as a dangerous shoal. And such inevitably would have been the fate of the equally incoherent cone—like craters of Etna and Auvergne during the seven and a-half months that intervened between the breaking up of the fountains of the great deep and the reappearance of the mountain tops, had they been included within the area of the Deluge."

The third, and which we consider to be one of the strongest objections of geology to the deluge is the fact, that in almost every district of the whole world, the fossil remains of animals of those kinds now existing upon the surface, are found buried in the strata immediately beneath, shewing that in each case such animals have been peculiarly indigenous to those spots for an immense number of ages. Naturalists by universal consent, founded upon the most careful and long continued observation, are agreed that every considerable region on the earth's surface contains animals and plants distinct in species from those of any other region. For instance there is a marked difference between the animals and plants of Europe, America, and Australia, and it admits of much smaller, but still distinct divisions. One authority before us, after referring to the peculiarly local distribution of plants, etc., thus refers to the analogous distribution of animals :—

“ Each continent and even different parts of the same continent, are centres of zoological families, which have always existed there, and nowhere else, *each group being almost always specifically different from all others.*”—(*Somervilles Physical Geography*, vol. 2, p. 210, 218.)

Professor Hitchcock on this point says :—

“ Naturalists reckon a large number of botanical and zoological districts, or provinces, as they are called, within which they find certain peculiar groups of animals and plants, with natures exactly adapted to that particular district, but incapable of enduring the different climate of adjoining districts. They differ considerably as to the number of these districts, because the plants and animals of our globe are by no means yet fully described, and because the districts assigned to the different classes do not fully coincide ; *but as to the existence of such a distribution, they are of one opinion.* The most reliable divisions of this kind make twenty-five botanical provinces, and five provinces among animals. The fact that man, and some of the domesticated animals, and a few plants, are found in almost every climate, until recently, blinded the eyes of naturalists to the manner in which the great mass of animals and plants are confined within certain prescribed limits. But so soon as the general fact is stated we immediately recur to abundant proof of its truth. *We should be disposed to question the veracity of that traveller who should visit a new and remote country, and describe its vegetable and animal productions as essentially the same as our own ; and all because the analogy of other portions of the globe leads us to expect that a new geographical province shall present us with a peculiar fauna and flora ; that is, with peculiar groups of animals and plants.*”—(*Religion of Geology* p. 117, 118.)

The above quotations shew what an immense variety of animals must have been preserved in the ark, in opposition to the assertion of many commentators, that a few forms only were required to be saved, whose progeny after the flood stocked the earth. Each country possesses its own peculiar plants and animals, *and consequently some of every sort from every country*, must have been preserved to fully accord with the account in Genesis.

In support of the statement, that in nearly if not quite every country, the fossils of the upper layers of the tertiary strata, are of the same or similar forms to those now living and moving upon its surface, numbers of eminent authorities could be adduced. We shall just quote concisely two or three. One writer (*Encyclo. Brit. art. Physical Geography*) says :—

“ A marked and almost complete separation subsists between the fossil faunas of the Old World, America, and Australia. . . . Australia is especially

characterised by the exclusive prevalence of the marsupial type which is altogether absent in other parts of the Old World and represented only by a single genus in the New, and in its fossil fauna we find an equally striking prevalence of the same singularity. According to Professor Owen. on the formation of the more recent tertiary periods in the limestone caverns of Australia abundance of mamalian fossils have been found, but except a single tooth of a martodon all of marsupials. Among them are fossil kangaroos, potoroos, wombats, dasyuri, etc., equalling the lion and leopard in size. on the other hand Europe, Asia, and Africa have not offered a single marsupial fossil in the pleiocene and pleistocene deposits [upper divisions of the geological strata] and those in America are limited to the genus *didelyhus* (oppossum) species of which at present exist there." and "the distinction between the fossil faunas of America and the old continent is not less marked." See also Professor Owen's *British fossil Mammalia* p. 45).

Another authority Professor Huxley (Lectures to Working Men p. 143) says :—

"The animals for instance of the newest tertiary rocks in any part of the world are always and without exception found to be closely allied with those which now live in that part of the world. For example in Europe, Asia, and Africa, the large mammals are at present Rhinoceroses, Hypotamuses, Elephants, Lions, Tigers, Oxen, Horses, etc., and if you examine the newest tertiary deposits which contain the animals and plants which immediately preceded those which now exist in the same country, you do not find gigantic specimens of Ant-eaters, and Kangaroos, but you find *Rhinoceroses, Elephants, Lions, Tigers* of different species to those now living but still their close allies."

He goes on to say that it is so with America, so with Australia, etc.

Now we hold that this fact, that in all the countries of the world the fossil remains imbedded beneath are similar in conformation, to those animals now living and moving upon the surface above them, is strong presumptive evidence, that in each case those kinds of animals have inhabited their own peculiar districts for an incalculable period of time, and that no universal deluge swept them from the face of the earth 4,000 years ago.

But once more allowing for the sake of argument that such a flood did take place 4,000 years ago, what does the evidence we have just adduced necessitate as the only way of surmounting the enormous difficulties. Either the animals moved of their own accord towards the ark, from all the continents and islands of the earth, in which they were peculiarly indigenious, through difficulties multifarious, and multitudinous, and placed themselves under Noah's care, and again after the flood each pair moved back through similar difficulties to their respective native spot of earth or water; or else Noah went into every part of the world over, through, or across all the hills, mountains, plains, deserts, forests, jungles, swamps, lakes, rivers, water-holes, caverns, and crevices of the earth, from the burning tropics, to the polar regions of eternal ice and collected them together just one male and one female of each species and brought them into the ark, and again as soon as the flood was over, carried them all back to the exact spots from which he took them. In any case, however the animals might have come and returned, (whether by the aid of Noah, or of their own accord both equally improbable), one thing is certain that according to the account, Noah was commanded to collect every kind of food that was eaten by all the animals that "lived" or "breathed" or "creeped" or "moved upon the whole earth" he therefore, whether he collected and distributed the animals or not

must have gone into every spot of earth where some of all this vast variety of animals lived, and collected the peculiar food which they respectively ate; and again as the vegetable kingdom would be almost annihilated in a twelve months flood of salt water, after such flood he must have gone back to all those innumerable spots, and planted in their proper situation seeds, roots, or cuttings, of nearly 200,000 species of plants, and which he must have collected before the flood and preserved in the ark, and then allowing that all these, overcoming the unfavorable conditions of a salt-encrusted earth etc., grew, as we before remarked, it would take some months at least, before the vast majority of animals could obtain a single meal.

We need not multiply the difficulties of a universal deluge; they are innumerable, but we have adduced enough to show the most casual reader that it is utterly indefensible on natural grounds. The reader who has made this class of subjects his especial study, knows that it is. The great mass of the people of Christian countries, are still taught that it can be defended on natural grounds; yet the more educated, intelligent, and thoughtful, perceiving the vast and innumerable difficulties, but still wishing to believe the account, as it stands in Genesis, to be historically true, have attempted to solve the difficulty by an hypothesis that the writer only meant to record a partial, and not a universal deluge. Now although this hypothesis, could it be demonstrated, would immensely lessen the difficulty; yet even with a partial deluge, the difficulties would still be so great, that it could not for a moment be defended on natural grounds, and besides it does the grossest violence to the plainest literal sense of the language, and the whole tenor and rationale of the story. We shall now therefore attempt to consider as concisely as possible the hypothesis of—

A Partial Deluge.

For many centuries it was universally believed by all who regard the Bible as a sacred book, that the Noachian Deluge was universal; it is still believed by the Jews, by the Greek and Catholic churches, and by the large proportion of Protestants that it was so, that the language in Genesis was quite literal, in fact means exactly what it says. And it is only in modern times that some eminent men as before remarked, moved by observing the overwhelming, and still increasing mass of physical objections to it, have attempted to give it a different reading, namely that of a partial deluge.

If we turn to the account in Genesis we find it one of the most clear, forcible, and explicit relations of ancient history, it states most distinctly and in a variety of ways, that the entire world was deluged, and every living creature in it, except those in the ark, died by drowning. Take the following passages Gen. vi., 7:—

“And the Lord said I will destroy man whom I have created from the face of the earth; both man, and beast, and the creeping thing, and the fowls of the air; for it repenteth me that I have made them.”

This statement of course utterly excludes the idea that any living animals except those in the ark, could have existed throughout all the world. All that he had made were included. In the first chapter of Genesis it says

that God made the animals in one day, and here in a cognate tradition it distinctly says that God determined to destroy all that he had made, and the whole tenor of the after-story serves to give emphasis to the literality of this statement. Gen. vi. 13, 17, it says :—

“And God said unto Noah, the end of all flesh is come before me ; for the earth is filled with violence through them ; and behold, I will destroy them with the earth. . . . And behold I, even I, do bring a flood of waters upon the earth, to destroy all flesh, wherein is the breath of life, from under heaven ; and everything that is in the earth shall die.”

Again Gen. chap. vii. :—

“And the Lord said unto Noah, come thou and all thy house into the ark ; . . . For yet seven days, and I will cause it to rain upon the earth forty days and forty nights ; and every living substance that I have made will I destroy from off the face of the earth And every beast after his kind, and all the cattle after their kind, and every creeping thing that creepeth upon the earth after his kind, and every fowl after his kind, every bird of every sort. And they went in unto Noah into the ark, two and two of all flesh wherein is the breath of life and the waters prevailed exceedingly upon the earth ; and all the high hills, that were under the whole heavens were covered and all flesh died that moved upon the earth, both of fowl, and of cattle, and of beast, and of every creeping thing that creepeth upon the earth, and every man : all in whose nostrils was the breath of life, of all that was in the dry land died. And every living substance was destroyed which was upon the face of the ground, both man, and cattle, and the creeping things, and the fowl of the heaven, and they were destroyed from the earth : and Noah only remained alive and they that were with him in the ark.”

Such is the language of the text, and we will venture to say, that in the whole range of history, ancient or modern, few passages can be found more explicit, definite, and positive in their language, if such language as this is to be explained away, surely any statement in history may be explained away and where would such unlicensed criticism lead us, but into utter and endless confusion.

The mode of argument adopted by Pye Smith, Professor Hitchcock, Hugh Millar, and others who take this view of a partial deluge is that there are many other passages in the Bible where the writers intending to speak of only a part do literally speak of the whole. The following passages are generally given in illustration. In Genesis xli. 54-57, speaking of the famine in the history of Joseph, it says :

“The dearth was in all lands. . . . over all the face of the earth. . . . and all countries came into Egypt for to buy corn, because that the famine was sore in all lands.”

And they argue that the writer could not have meant all the world in reality because it would be absurd to suppose that men would come from Japan or America to buy corn in Egypt. Now in this case they assume that the writer was acquainted with such countries as Japan, and America, and therefore could not have meant literally what he said. But we know that the world as known to the ancients, more especially to the Jews, was very limited, and did not include such distant countries as Japan, and America, and there is not the slightest reason to suppose that this writer had a knowledge beyond that of his countrymen, and men have no right to assume an improbability, namely, that he had such knowledge to get them out of a difficulty. The words used by the writer, are most explicit and comprehensive.

The dearth was in all lands. . . . over all the face of the earth.

If such clear positive language as this is to be explained away whenever convenient, by an arbitrary assumption, all fair and reasonable criticism is at an end.

Another passage given in illustration is Deut. ii. 25, where it says, that God put the fear of the Jews upon all nations. The passage is—

"This day will I begin to put the dread of thee, and the fear of thee,—upon the nations that are under the whole heaven, who shall hear report of thee, and shall tremble, and be in anguish because of thee."

Here again the writer spoke of the limited world, the whole world as known to him, and literally meant the whole. We cannot reasonably attach any other meaning to his words, men have no right to superinduce their modern, and more extensive geographical knowledge, upon him, and then reason, they should judge of the man as he really was.

Again in the account of the miraculous gift of unknown tongues, at the feast of Pentecost, Acts ii. 5, 6. It says and they—

"Began to speak with other tongues, as the spirit gave them utterance. And there were dwelling at Jerusalem, Jews, devout men out of every nation under heaven. Now when this was noised abroad, the multitude came together, and were confounded, because that every man heard them speak in his own language."

The evident intention of the writer here was to convey the idea that the disciples were miraculously gifted to speak all the languages of the earth, and that men from every nation under heaven were there present who verified the fact, and this is the sense in which it was always understood and explained by the early christians, and is so still by vast numbers of the modern ones.

There are many passages in the Bible of a similar class which are frequently quoted, but in our opinion the words of nearly or quite every passage which we have seen instanced, taken literally, convey the meaning of the writer. But even supposing that, in some places, a hyperbolical or exaggerated mode of speaking is indulged in, one or two, or a dozen hyperbolical statements do not prove that all the plain definite statements of an entire history are hyperbolical also; that there are hyperbolical statements more or less in nearly all histories is true, but if every critic to suit some particular theory, is to explain away the most positive statements of history at will, and in utter opposition to their contexts by the application of such a principle of criticism as this, then all real history is at an end. The first chapters of Genesis state, most distinctly, that God created every living thing, both plants and animals, that for certain reasons he determined to destroy every living thing by a flood which he had made, that every living animal that breathed or crept, or moved upon the earth, and every living substance died drowned in a flood of water, which rose above the tops of all the high hills under the whole heaven. If this was not intended to be a record of a universal deluge the language, to use an old but apt figure, is "a mockery, a delusion and a snare." *For a real universal deluge could be expressed in no plainer terms.*

In other respects also this hypothesis of a partial deluge is beset with

insurmountable difficulties ; for instance, a flood that would cover Mount Ararat would of necessity in obedience to the law of the equilibrium of fluids by which water finds its level, cover the whole world (at least with its present shape ; and history, and physicial science, both affirm that it has scarcely altered it in the slightest degree since that time). An ordinary tidal wave, caused by some slight upheaval will in a few weeks sweep round the world, how much more then, and with what increased velocity would a flood covering a mountain 17,000 feet high, sweep around the world even allowing such flood to have entirely originated in the single region of Armenia.

Different ways have been imagined, by which the top of Mount Ararat might be covered, and still the flood not deluge the whole earth. One is that the water might have stood up like any body of solid matter with Ararat in the centre and another is that a portion of the earth's surface, say a track of country the size of France, but including Mount Ararat, might have been gradually sunk, allowing the water to rush in, and flood the depressed area, and at the end of a few months, be as gradually upheaved again allowing the water to drain off and leave the ground dry.

Respecting the first we can only say that it appears to us absurd, inas-much as it is totally opposed to the laws of physical science, and to the universal experience of mankind, for water to stand up unsupported, like solid matter. And respecting the second, that although physically possible such a solution is a pure assumption, unsupported, and in fact, altogether opposed, to the relation in Genesis. True, it is one way, and an ingeneous way of getting out of a difficulty, but with a similar licence of imagination, and ignoring the evident sense of history, we could at once get out of any historical difficulty whatever.

The real cause which originated, and spread the hypothesis of a partial deluge was the overwhelming, and increasing testimony of modern science against a universal one. This is denied by some who are unwilling to allow that science should in the slightest degree influence their faith, and they affirm that they hold the view of a partial deluge, not because science produces vast presumptive evidence against a universal one, but because the Deity always works by the most economical means. They argue that man alone had committen sin upon the earth, that man only was to be destroyed, that a flood which would cover the world, then inhabited by man, was sufficient for the purpose ; and that God carrying out his own purposes as he ever does by the most economical means, would most certainly not have drowned the entire world, a great portion of which would be flooded to no purpose, and innumerable multitudes of living beings who had not sinned at all, would unnecessarily, cruelly, and unjustly perish.

But in addition to the general and all comprehending statement that God determined to destroy, and did destroy, every animal, and every living substance which he had made, and placed upon the earth, it says in addition, that the animals had sinned, as well as man, that God had determined to destroy them also, that he did destroy them, and after the flood made a solemn covenant, with those that were saved in the Ark, as well as with the human beings, that he would no more destroy either of them with another deluge in the future ages of the world. We have not

space to give the passages in immediate confirmation, but let the interested reader turn to Gen. vi. 7, 11, 12, 13, 17 ; vii. 21—23, ix. 11—17 ; and he will see that our words are fully borne out. It may by way of illustration be remarked here that many of the ancient nations held that animals as well as man, were morally responsible for their actions, Mahomet taught and it is believed by the Mahometan world at this day, that at the day of judgement every beast will be resuscitated, and judged of the deeds done in the body. (*Sale's Preliminary Discourse to Koran*). See also, Gen. ix. 5.

The upholders of the hypothesis of a partial deluge, in evidence that science did not compel them to adopt their present views, but that it was the overwhelming one of economy, adduce as the strongest argument in point that Matthew Poole, and Bishop Stillingfleet both as far back as the seventeenth century, took the view of a partial deluge, on the grounds of economy, before the scientific difficulties were known. But without wishing to be uncharitable, we cannot but consider this argument of economy, then, as now, the ostensible and not the principal real one. The physical difficulties even in the seventeenth century, must have appeared in great force to thinking men. Poole and Stillingfleet, in the seventeenth century, both knew of the existence of China, South Africa, North and South America, and other distant countries which were entirely unknown to the ancients, and which they must have known contained an immense variety of animals differing from those of the old world, and representatives of which, according to the literal account in Genesis, must have been brought and preserved in the ark ; this, and in fact a great number of the other difficulties now seen, must even at that time have been manifest to them. As a direct evidence that in the seventeenth century a variety of difficulties were advanced against a universal deluge, we find different writers arguing in support of it, and attempting to prove it physically possible. Sir Walter Raleigh in his "*History of the World*," Willet in his "*Commentary on Genesis*," Dean Wilkins in his "*Essay towards a Real Character and a Philosophical Language*," each attempt to answer the objections of doubters. Isaac Vossius argued for a partial deluge, because the difficulties of a general one were so great ; and lastly Poole and Stillingfleet themselves, in arguing for a partial deluge, both attempt to answer the sceptics. We have not Stillingfleet now before us, but Poole after suggesting or adopting the hypothesis of a partial deluge, remarks :—

"If we take this ground, the difficulties which some have raised about the deluge fall away as inapplicable, and mere cavils ; and irreligious persons have no reason left then for doubting the truth of the Holy Scriptures."—*Synopsis on Gen.* vii. 19.

It is incorrect therefore to say that Stillingfleet and Poole started, or adopted the hypothesis of a partial deluge, on the grounds of economy alone, before scientific difficulties were perceived at all. True, within the present century, by the great advance in geological, and general science, the difficulties against the universal deluge have been perceived in greater number and magnitude ; still long before the seventeenth century many and great scientific difficulties were perceived, urged against the account, and argued by the opposite parties, pro and con.

We shall now in a few words, consider this question of economy upon its own merits. It is said that mankind could not have spread far over the earth in the time that had elapsed from the creation to the flood, and that all the portion which it would be necessary for God to drown, would perhaps be a country the size of France. But would it be the most economical mode of destroying the present inhabitants of France, to submerge the country? Certainly not! A thousand more economical means might be adopted. We read in the Bible that 50,000 people were struck dead at one time for looking into the "Ark of the Covenant," that an angel killed 70,000 people in one day by smiting them with a pestilence—that an angel killed 185,000 men in one night while they slept—that all the first-born of the Egyptian nation, without a single exception, were struck dead in one night. It might fairly be argued that these were economical means of destroying men, but surely not the deluge, not even if it was a partial one, covering a tract of country no larger than France. If we may be allowed to illustrate the subject by a reference to man and his domestic possessions, we may ask, What man on the grounds of economy would think of deluging his estate if he simply wished to destroy the cattle upon it? If he were specially to study economy he might drive them all together, or shoot or spear them where they were, or poison their drink, or put into operation a hundred other modes more economical than submerging the entire estate, over which they were spread.

And besides if it was a partial deluge on the grounds of economy, why the unnecessary labour of collecting pairs of every living thing into the ark? The Catholic commentator Calmet, in his Dictionary article on the deluge, arguing for a universal one, very pertinently puts this point, he says:—

"Supposing a partial deluge only, what necessity was there to build at a great expense, a prodigious ark? to bring all sorts of animals into it for preservation? or to oblige eight persons to enter into it, etc. Was it not more easy to have directed these people, and animals, to travel into those countries which the deluge was not to reach."

This would certainly have been the greater economy. The birds in particular, who many of them, fly from one distant country to another at certain seasons to escape the inclemency of the weather, etc., could have flown into the adjoining countries, and lived there much more easily than in the ark.

Again, what economy and what justice was there, if man alone had sinned, in drowning all those animals which were within the deluged area? surely it was as unnecessary and as unjust to drown them as it would have been to have drowned those outside of that area.

Again, if the question of economy was considered what necessity was there for the earth to remain under the water, and all that vast number of animals to remain in the ark for twelve months, when twelve hours immersion would have been sufficient to drown every man.

In conclusion therefore we cannot but regard this plea of economy now almost universally advanced by those who, being compelled to modify their faith by the irresistible deductions of science simply as an ingenious, a happy mode of explaining away a defeat, and feel convinced that had not the scientific objections pressed so hard upon them, we should never have

heard of a partial deluge, upon any such grounds as that of economy ; nay more, as an eminent authority has observed, it is only the finding themselves driven by the irresistible facts of science into a position of "*utter perplexity*," that has made them, at the cost of such violence to the evident sense of the account in Genesis, attempt to solve the difficulty by the hypothesis of a partial deluge at all. In Exodus xx. 9—11 it is said that in six days the Lord made heaven and earth, the sea, and everything in them, and rested on the seventh, and the Jews in commemoration of the event are commanded to work six days in the week, and keep holy the seventh. Of late years geology has shewn by an overwhelming mass of presumptive evidence that the earth itself was not made in six days. The scientific evidence is too plain to be ignored, and so accommodating interpreters have made arbitrary divisions in the geological strata, and inform us that the world was not made in six days, but in six epochs. As has been suggested, the passage therefore in all consistency should read—

Remember the seventh epoch, to keep it holy. Six epochs shalt thou labour, and do all thy work, but the seventh epoch, is the sabbath of the Lord thy God ; in it thou shalt not do any work, thou, nor thy son, nor thy daughter, nor thy manservant, nor thy maidservant, nor thy cattle, nor the stranger that is within thy gates. For in six epochs, the Lord made heaven and earth, the sea, and all that in them is, and rested the seventh epoch, wherefore the Lord blessed the seventh epoch, and hallowed it.

Into a position of similar absurdity does the most positive language, and the whole tenor of the account in Genesis, force the upholder of a partial deluge.

How did the Account of the Deluge Originate?

We shall next attempt to consider the question—How did the story originate ? That a universal flood did not take place four thousand years ago, geology very conclusively proves, unless as has been suggested, a miracle was wrought to remove all natural evidences of such a catastrophe from the earth—a conclusion wrung out by stern necessity from those who attempt to defend the position at all costs against overwhelming evidence—and a position so forced and improbable that few thinking men can possibly accept it. That all that vast number of animals was brought together—a pair of each, from all the various parts of the world, kept together for twelve months in a close vessel, and then each pair distributed to its own spot of earth and proper natural conditions, that a rain of forty days deluged the world above the tops of the highest mountains, etc.—science proves, could not have taken place according to natural laws as we now see them uniformly working.

Science, therefore, furnishing strong presumptive evidence that the account of the deluge in the Pentateuch is not literally true, the question naturally arises, How did the story originate ? Is it a description of a local flood exaggerated by its ignorant traditionary custodians, or is it a pure myth ? We cannot say, but are strongly inclined to think that some extensive local flood served as a foundation for the story, and that in the course of ages, colored and embellished by the exaggerating tendencies and ignorance of those through whose hands it passed, the account of such local flood grew into the story of a universal deluge as it stands in Genesis.

That there have been a vast number of deluges on the earth is demonstrated both by geology and history. The science of geology informs us, that there is scarcely, one, if a single spot on earth, but what has been at some time or other deluged, and most places many times in succession, sometimes by the sea and sometimes by a flood of fresh water. These floods have frequently been extensive, but never universal. It seems that our globe is gradually settling down to a state of quiescence, that of late centuries the convulsions of nature and floods among them have not been so numerous, so violent, or so great as they were in the long past; yet even within the historic period, we find many such floods recorded. We read of enormous floods in Greece, in Egypt, in Chaldea, in India, in China, in Mexico, in Peru, and in other countries in ancient times; and from those times up to the present, universal history records an immense number of extensive floods that have happened in various countries of the world, floods caused in some cases by the sinking of tracts of country, and in others by heavy and long-continued rains.

By way of illustration, we shall just give one instance of each species of flood which has occurred within the memory of living men. Hugh Millar (*Testimony of the Rocks*, p. 298) says:—

“In 1819, a wide expanse of country in the delta of the Indus, containing fully two thousand square miles of flat meadow, was converted by a sudden depression of the land, accompanied by an earthquake, into an inland sea, and the tower of a small fort, which occupied nearly the middle of the sunken area, and on which many of the inhabitants of a neighbouring village succeeded in saving themselves, may still be seen raising its shattered head over the surface,—the only object visible in the waste of waters of which the eye fails to determine the extent.”

In the year 1839, Mesopotamia, the very country where the ark is said to have been built, was subjected to a vast inundation. Colenso, quoting an authority on the subject (*Pent.* vol. iv., p. 220) writes:—

“On April 21, the water was high upon the ramparts of Bagdad, and six feet above the level of the city. As far as the eye could reach, nothing was to be seen, from the highest tower of the mosques, but a great waste of waters, studded here and there with a few date groves, which appeared like little islands: all cultivation in corn and garden produce was completely destroyed; thousands of square miles of country were at that time inundated, and numerous encampments of Arabs were drowned in the localities where they had been accustomed to dig wells for a scanty supply of brackish water. *Nearly a third of Mesopotamia was under water.*”

These are but a couple of modern floods amongst many, even thousands, which could be enumerated. In fact there is scarcely a country upon earth but has had at some time or other its extra great flood or floods, even within the last few centuries, and in most cases greater and more numerous ones the farther we go back in time.

And this immediately brings us to the consideration of the greatest and almost only even plausible external evidence which is still advanced by learned divines in support of a universal deluge, namely, that “*amongst all nations is to be found the tradition of such a deluge.*”

That such traditions of a deluge or deluges do exist amongst all nations is admitted on all hands. One of the most uniform and universal assertions to be found in the traditions of all the aboriginal races, is that a very long time ago the whole world was drowned by a flood of waters, and

all humanity perished except one man and his wife, or a single family ; and that these saved themselves by a raft or a boat, or by going up to the top of one of the highest mountains in their neighbourhood, and that after such flood these persons peopled the earth again.

It is useless to waste space in noticing the various accounts of such deluge or deluges (for some nations record several universal ones)—they can be found in nearly every history or notice of the various aboriginal races. Humboldt thus summarises this universal feature :—

“These ancient traditions of the human race, which we find dispersed over the surface of the globe, present among all nations a resemblance that fills us with astonishment ; there are so many languages belonging to branches which appear to have no connection with each other, which all transmit to us the same fact. The substance of these traditions respecting the destroyed races and the renovation of nature is almost everywhere the same, although each nation gives it a local colouring. On the great continents, as on the small islands of the Pacific, *it is always on the highest and nearest mountains, that the remains of the human race were saved.*”

Now that such traditions do exist amongst all the aboriginal tribes of the earth, we hold is not of necessity any proof whatever of the truth of the Noachian deluge, or of any universal deluge at all. Since man has existed upon the earth, as we before noticed, according to the emphatic and mutual testimony of geology and history, there have been many, and extensive floods in nearly if not quite every country of the world—floods which have inundated large tracts of land and swept away multitudes of the inhabitants. What more natural, then, than to suppose that traditions of the most extensive of these terrible catastrophes, although but partial deluges in reality, have been handed down, gathering as they came, as all traditions do, until at length a number of them have grown into universal deluges.

Again, it is exceedingly probable that there have been many cases since man has been upon the earth (a period according to the estimate of Sir Charles Lyell and the later geologists of *at least fifty thousand years*) when in some of the great floods two or three or a dozen persons have been saved on a raft, or in a boat, or by flying to high ground, who in their limited knowledge of the world, have really believed that they were the only persons saved, and who have afterwards increased in number, but for generations formed an isolated community. In such a case (and that many such have happened amongst the scattered tribes of the earth in the long lapse of ages is almost certain), we can see how the story of a universal deluge, and with the single exception of the isolated saved ones, of the total destruction of all mankind, would in all sincerity originate.

Such, therefore (whether the flood was at first ignorantly thought to have been universal, and in all sincerity handed down as such, or thought to have been a partial deluge, and in the course of time became exaggerated into a universal one), we believe was the origin of the traditions to be found amongst all the various aboriginal tribes of the earth, and such the origin of the Noachian deluge itself. And we think that, taking all the circumstances of the case into consideration, *the wonder should appear to us, not that such traditions are to be found amongst all nations, but that a single nation should be found which had no such tradition.*

We shall next, and lastly, attempt to show that the account in Genesis, (like the traditions of deluges among all nations), whatever circumstances might really have originated it, bears clear internal evidence of being at least exaggerated and coloured by ignorant men, that its entire detail is made up by men holding the crude limited child-like belief of the untutored barbarian respecting the extent of the world and natural phenomena in general, by men unacquainted with even the simplest elements of geographical, zoological, and meteorological science.

The ancient Jews, like most rude people, appear to have had very limited notions of geography. In their writings we find passage after passage which impresses this idea upon us. Babylon is spoken of by an eminent person dwelling at Jerusalem as "*a far country*" (2 Kings, xx. 14), and yet Babylon was only about as far from Jerusalem as London is from Edinburgh. It is said that the Queen of Sheba came from "*the uttermost parts of the earth*" to hear the wisdom of Solomon (Matt. xii. 42); and yet according to the general opinion of commentators, her country was only a few hundred miles from Jerusalem. Again the Mediterranean sea is spoken of as emphatically "*the great sea*" (Joshua, xxiii. 4, etc.), and the river Euphrates as emphatically "*the great river*" (Gen. xv. 18, etc.) Of more distant seas, rivers, and countries they appear to have had very little knowledge, and not the slightest conception that the world was a globe, that such countries, as America, Australia, farther Europe, farther Africa, or farther Asia, that seas greater than the Mediterranean, or rivers greater than the Euphrates, existed at all. We know how limited, comparatively, was the world as known to the earlier Greeks and Romans, and as known to the ancient Jews it appears to have been much less.

Again, the earlier Jewish notions of zoology were exceedingly limited and crude. They believed that about two thousand years before the flood, God had created the various kinds of animals, and brought them to the first man, and that he had named them all. They knew nothing of the vast variety of animals of far distant countries, and other minute ones immediately beneath and around themselves; they know nothing of the two hundred thousand species of living animals invisible to the naked eye, which it would take a man a month to name if he named fifty every minute, and *a discriminating memory, and power of linguistic invention* never yet possessed by any man, or any ten men. The barbarous tribes of any country are acquainted with comparatively few forms of animal life, just the larger forms of their own, and a few of those of the immediate surrounding countries, and there is every reason to suppose that the Jews, or whoever originated the account of the Noachian deluge, possessed an equally limited knowledge; to them it appeared simple enough for one man to collect pairs of all kinds of animals and bring them into one spot, equally as simple as it did for one man to name them in one spot a few hundred years before.

Again, respecting the want of sanitary regulations, the necessary supply of light, etc., in the ark. These are objections which would strike the reflecting man of science, but would scarcely occur to the ignorant man at all, and accordingly we find these indispensable conditions of animal life entirely ignored and directly violated.

The Jewish notions of meteorology were equally crude and erroneous.

Judging from appearances, they believed that the apparent dome above our heads was a firmament, a solid concave structure, and according to Josephus (a fair exponent of Jewish views) built of crystal. (*Antiquities of the Jews*, chap. 1, sec. 1.) This belief of the Jews may be easily illustrated by a reference to the beliefs of many uninformed nations at the present day, who like the ancient Jews, judging from superficial appearances have arrived at similar unscientific and child-like conclusions. We shall just adduce two or three instances. One writer speaking of the Hindoos says :—

“According to them the firmament is a solid fixed arch of a blue color.”—*Calcutta Review*, vol. 11, p. 432.

Mr. Ellis, speaking of the Polynesians, says :—

“They imagined that the sea which surrounded their islands was a level plain, and that at the visible horizon, or some distance beyond it, the sky, or rai joined the ocean, enclosing as with an arch or hollow cone, the islands in the immediate vicinity.”—*Ellis's Polynesian Researches*, vol. 3, p. 168.

Another writer, speaking of the inhabitants of Madagascar, says :—

“The geographical and astronomical theory of the Malagasy philosophers in relation to the world's form and nature is, that we live on a flat surface encompassed on all sides beyond the sea by a solid sphere let down upon us, which is the horizon. They entertain no doubt that one might climb up this horizon on its outer side, supposing they could only transplant themselves thither, and innumerable are the fables founded upon the history of such arduous enterprises, encountering the great God, and so forth. One of the first questions which they put to a white man, has immediate relation to the said sphere—What is the horizon? is it made of gold, or of pearl, of wood, or of stone?”—*Madagascar, Past and Present, by a Resident*, p. 30. See also, *Chinese Repository*, vol. 7, p. 510; *Morrison's Chinese Miscellany*, p. 34; *Williams's Missionary Enterprises*, p. 541.

The Jews in their account of the creation, allot the making of this supposed firmament or solid sphere to God as one day's work out of the six (Gen. i. 6, 8), while another day is allotted for the making of the sun, moon, and stars, (Gen. i. 14, 17). And to the child, to the barbarian, or even the unscientific in civilized countries, the making of the firmament would appear the much larger day's work of the two, and this was evidently the opinion of the ancient Jews, as portrayed in their account of the creation. They had not the remotest idea that the sun was more than a million times larger than our earth; that the stars were so many millions of stupendous suns and worlds rolling in majestic and inexpressible harmony through illimitable space; that instead of being created especially for the purpose, and placed in the under surface of the “firmament” to give light to our earth (Gen. i. 15, 18), the great majority of them were thousands of millions, and millions of millions of miles beyond it; that our earth was, compared to them was but as a drop of water to the ocean, and the supposed “firmament,” no firmament at all, but simply an optical illusion.

The Jews, also, like many other rude peoples, believed that the top of this vault or firmament formed as it were the ground-floor of Heaven, where dwelt God and his angels (see Gen. xi. 5, 6, 7; xviii. 21; xix. 24; Psalms lxxviii. 23, 25; Gen. xxviii. 12), and that the earth was communicated with, through windows or doors formed in the solid framework of the structure. The term windows of heaven, with them in most cases meant no figure of speech, but a reality. It is necessary for the proper consideration of our subject to fully realise this fact.

All rude peoples throughout the earth, and in all ages, have had a mode of accounting for all the various phenomena of nature, and among others for that of rain. Some account for it in one way, and some in another, but the most common belief is, that there is a large quantity of water stored up above, and that when it rains it is simply a portion of it by some agency being precipitated upon the earth. The Hindoos believe that the moon is the great reservoir of water, and that rain results from a portion of it being by a certain agency made to drop through numerous pores in the clouds.—*Calcutta Review*, vol. 11, p. 480, 481.

Another authority, speaking of the Siamese, says :—

“The Siamese priests say, that in the midst of the heavens there is a great basin, in which the angels bathe ; when too many angels go to bathe at the same time, the celebrated basin overflows and this causes rain upon the earth.”—*China, Pictorial and Descriptive*, p. 387.

The Greenlander believes that there is a large lake up above ; that when this lake overflows it rains, and that should it happen to burst *there would be a universal deluge upon earth*.—*Crantz's History of Greenland*, vol. 1, p. 178.

The Jews were equally simple in their notions. They imagined that above the “firmament” were situate large reservoirs of water, and large quantities of hail, snow, etc. ; that when it rained, or hailed, or snowed, it was in consequence of some of these substances being poured down through the “windows of heaven,” and generally by special command of the Deity. Hail in particular (probably in consequence of its fitful and destructive character) they believed to be beyond all doubt, an agent of God's vengeance. In the book of Eccles. xxxix. 35, it says :—

“Fire, hail, famine, and death, all these were created for vengeance.”

In the book of Job, God is made to put to Job the following query :—

“Hast thou entered into the treasures of the snow, or hast thou seen the treasures of the hail which I have reserved against the day of trouble, against the day of battle and war.”—Job, xxxviii. 22, 23.

In another place we are informed that God cast down great hailstones out of heaven upon the enemies of the Jews :—

“And it came to pass as they fled before Israel, and were in the going down to Beth-Horon that the Lord cast down great stones from heaven upon them, unto Azekal and they died. They were more which died with hailstones than they whom the children of Israel slew with the sword.”—Jos. x. 11 ; see also Ex. ix. 23 ; Rev. xvi. 21.

In the account of the creation given in the first chapter of Genesis, this belief of the great waters being above the supposed solid firmament is clearly shewn :—

“And God said, let there be a firmament in the midst of the waters, and let it divide the waters from the waters. And God made the firmament and divided the waters which were under the firmament from the waters which were above the firmament, and it was so ; And God called the firmament heaven. . . . And God said let the waters under the heaven be gathered together into one place and let the dry land appear, and it was so. And God called the dry land earth, and the gathering together of the waters called he seas.”—Gen. i. 6-10.

Here evidently the idea is that a part of the water went up, and remained above the solid firmament, and we find this idea running throughout the Bible. The Psalmist exclaims :—

"Ye waters above the heavens praise him."—Psalms, cxlviii. 4.

The writer of the second book of Esdras relates a conversation carried on between himself and an angel. The angel puts what he considers some unanswerable questions to Esdras, as follows:—

"Weigh me the weight of the fire, or measure me the blast of the wind, or call me again the day that is past. . . . How many springs are in the beginning of the deep, or how many springs are above the firmament."—2 Esdras vi. 5-7.

And again in speaking of the creation, Esdras says:—

Oh Lord, . . . upon the second day thou madest the spirit of the firmament, and commandest it to part asunder, and to make a *division betwixt the waters, that the one part might go up, and the other remain beneath.*"—2 Esdras vi. 41.

In the days of the prophet Elijah we are informed that *the heavens were shut*, and it rained not upon the earth for the space of three years and six months.—Luke iv. 25. See also 2 Chron. vii. 13.

Another writer says:—

"By his (God's) commandment he maketh the snow to fall apace, and sendeth forth swiftly the lightnings of his judgement, through this are the treasures opened and *the clouds fly out like birds.*"—Eccles. xliii. 14, 15. (Douay Trans).

But the most forcible passage which we have come across in the Jewish writings, as illustrating the notion of the Jews on this subject, is in the book of Enoch. The book of Enoch, although not strictly a canonical book of either the Jews or the Christians generally, yet it is quoted by St. Jude, was held as canonical by many of the early Christians, and is still held as canonical by the Christian church of Abyssinia. The Jews believed that Enoch went to heaven without dying, and the book of Enoch undertakes to inform us what he saw when he was there. We are informed that among other things he saw God sitting on his throne, surrounded by angels and archangels, he saw the future habitation of the blessed and the condemned, the tree of life, etc. But what is more immediate to the purpose of our subject he saw the receptacles, or great depots, from which come all the clouds, and snow, and rain, and hail, and mist, and dew, also the great receptacle of light, and thunder, and every species of lightning the great receptacles of darkness, and of the winds, the great receptacles of fire, and water. He saw also mountains of the gloom which constitutes winter, etc., each receptacle in charge of an angel. *Book of Enoch.*

To persons holding such views as these, it seemed very simple for rain enough to be poured down from heaven to deluge the world above the tops of the highest mountains. And accordingly we are informed that *the "windows of heaven were opened,"* and it rained for forty days and forty nights upon the earth, and again "*the windows of heaven were stopped, and the rain from heaven was restrained*" (Gen vii. 11, 12; viii. 2), and the waters prevailed and all the high hills under the whole heavens were covered. The originator or originators of the account had not the slightest idea that it might rain for centuries without increasing the amount of water on the earth by a single drop:—

"The same day were all the fountains of the great deep broken up, and the windows of heaven were opened."—Gen. vii. 11.

We are unable to say what is exactly meant by the fountains of the great deep being broken up, but we think that the idea which the writer wished to convey was that all the natural springs of the earth commenced to flow with increased velocity, in a similar manner as the rain poured down out of heaven more incessantly.

If we were to ask an uninformed man what were the principal sources of water supply, he would answer "Rain and natural springs," not knowing that all the fresh water springs of the earth were also produced by accumulations of rain water; besides, we know from many expressions in the Jewish writings, that they believed there to be a great quantity of water under the earth—what if they did not believe that the earth actually stood upon the waters? Ex. xx. 4 refers to—

"The waters *under* the earth."

Ps. xxiv. 1, 2 says—

"The earth is the Lord's and the fulness thereof, the world, and they that dwell therein. For he hath founded it *upon* the seas and established it *upon* the floods."

Again, Ps. cxxxvi. 6 :—

"Him that stretched out the earth *above* the waters."

And again, 2 Esdras, xvi. 58, 59 :—

"He framed the earth *upon* the waters. He spreadeth out the heavens like a vault, *upon* the waters hath he founded it."

This idea of the earth standing upon the waters was an old one of the Hindoos and other nations, and probably, as the above expressions indicate, also that of the Jews. Men saw that in most countries where they dug wells they found water, they saw the water frequently bubble up spontaneously out of the earth, and in their ignorance of the sciences of geology and hydrostatics they very naturally concluded that *beneath the earth was an unlimited quantity of water*. It is quite reasonable therefore to suppose that a person in those times, writing to account for a universal deluge, should add to an increased fall of rain from heaven, an increased flow of the springs of the earth, and colored with his incorrect belief, call it the breaking up of the fountains of the great deep. The passage being so concise and indefinite in itself and unexplained by the context, it is impossible to state positively the writer's meaning; the utmost that we can do on this point is to conjecture, but we think that the explanation we have given is the right one.

We are informed that after the flood the waters were dried up from off the earth by a wind. This idea again appears to have been the conception of a person unacquainted with natural law; he had seen the wind dry up water in small quantities again, again, and again, and he naturally concluded that in a good length of time, by means of a strong wind a large quantity would dry up also—in his opinion, when the water was dried up it was gone out of existence. In his unscientific simplicity, he had not the slightest conception, that when the wind dries up water, it simply goes off in the shape of invisible vapour, and must necessarily before many days fall again in a condensed form, in some other part, and that a strong wind might blow for a hundred years, and not waste one foot of water from off the earth's surface.

We shall now conclude our argument. Much more might have been said upon the subject, more especially upon its theological and moral bearings did opportunity permit. We have dwelt more particularly upon the scientific objections, and the probable and glaringly apparent ignorance of the originators of the account, because these appeared to us the most striking and numerous. And here the question may be put, as it frequently has been:—"Allowing the Noachian deluge to have been a partial one, grossly exaggerated, or one without the slightest foundation, absolutely untrue, what harm does it do for the people to believe it?"

We answer that the same argument could be used with equal propriety, with respect to any, and every other article of man's belief however false, and it is surely better that men should believe truths, than that they should believe falsehoods. A belief in the truth of the deluge, allowing it to be false, may not of itself so directly or manifestly affect man's welfare as the belief in witchcraft, in the efficacy of trial by ordeal, in the rightfulness and efficacy of human sacrifices, in the lawfulness of human slavery, or a hundred other glaringly pernicious beliefs; but we hold that in the very nature of things the belief of all falsehoods whatever, however innocent apparently in the abstract, is in reality pernicious—that the belief of a falsehood never yet benefitted man—that it never can benefit him—that a knowledge of the truth in every respect is above all others, the one thing needful for man's welfare—and that therefore it is the duty of every man to discountenance and attempt to explode everything which he believes to be false. A profound conviction of this truth is our apology and our justification for the present paper, —and as a parting word with our readers, in all earnestness and friendship we would add—Let us all persistently strive to realize the motto placed above. "In practice let us do unto everyone as we would they should do unto us, and in matters of faith endeavour by every means in our power to believe the truth, the whole truth, and *nothing but the truth*"—and then we may rest assured that all will go well.

HABITANS IN TERRA.



ATTITUDE OF THE CLERGY TOWARDS SCIENCE.

THE following extracts are taken from a lecture by the Rev. F. W. Farrar, delivered to a congregation of ministers of the Church of England, at Sion College, London, at the request of its President, and published in the "*Contemporary Review*" for the month of December, 1868. A lecture which for the admissions and concessions it makes to the cause of truth and progress, is certainly one of the most remarkable and telling productions which ever fell from the lips of an orthodox Christian minister.—It shews most emphatically the signs of the times, when a minister, after uttering so much wholesome truth, is still allowed to remain unchallenged within the pale of the church, and to publish such a lecture in an orthodox review, edited by the Dean of Canterbury. A review, which we understand, was actually started to counteract the too advanced tendencies of "*The Fortnightly*."

There are two main points which the rev. gentleman has attempted to show. The first is that while the progress of science has done much to civilize the world, has ever increasingly tended to make "*man's mind more expansive and his life more full of joy.*" Theologians accepting the erroneous science of the Bible writers as correct, have continually opposed true science and persecuted scientific men, and still do oppose it, and persecute them more or less. The second is that the Bible generally is the inspired word of God, but to use *his* own words, that "*The mere natural science of the Bible is the natural science of its writers*"—that in fact the scientific statements and references in the Bible partook of the imperfect scientific knowledge of the writers, that they did not know, but spoke what they erroneously believed to be the truth. On the above grounds, he in effect suggests that scientific men and theologians should come to an agreement, and for ever end the hostility between the two—that scientific men should accept the Bible as divine in its doctrinal parts, and theologians accept its science as imperfect, and so join hands.

Doubtless, many will think that such a compromise is in the nature of things impossible; that an arbitrary line cannot be drawn between the divine and the mere human utterances of the Bible writers, they will ask, "If the mere natural science of the Bible is the natural science of its writers," is it not exceedingly probable that the mere doctrines of the Bible are simply the doctrinal opinions of its writers also? and as the progress of modern science has proved that the mere natural science of the Bible writers was at fault; has not the more humane and enlightened outcome of modern thought and feeling, as plainly demonstrated, that in many cases their ethical and theological opinions were at fault also.

In any case the rev. gentleman has given a most eloquent, forcible, outspoken, and above all, eminently salutary address. For ourselves we believe that he is wrong on one or two points, (*especially in his saving clauses*), but we know that he is right on others, and we thank him for the truth that he has uttered.

THE subject before us is too important to be easily exhausted. It is nothing less than the past, present, and future relations between the teachers of our national religion and the representatives of our scientific thought. The views of the most numerous clergy will always, by virtue of their influence, be the views of the most numerous laymen. Looked up to in thousands of parishes as the natural leaders of opinion—possessed of an authority which gives to their utterances an almost oracular dignity—this great society is the most powerful that could be imagined to disseminate each fact, which opens before the minds of men a new "window into the infinite," and each discovery which sheds a fresh ray of revelation upon the power of God. It has always, in past times,

been a heavy disaster and a prelude to yet more perilous catastrophes, when the clergy have opposed the declarations of science till opposition has become no longer possible, and then have defended and admitted them on grounds wholly different from those by which they were established. That such *has* been the case in past ages, and that in spite of an immense improvement, the spirit of those ages in this respect has not wholly died away, may, I think, be demonstrated by overwhelming evidence. And if this be so, as I sincerely believe, is it not at once our wisdom and our duty to recognise the fact? Is it not at once the most orthodox and the noblest course to read lessons of calmness and wisdom for the future by the troubled light which is thrown upon us from the errors of the past?

For if any one imagine that I am about to make a vulgar attack upon the clergy—or, indeed, an attack of any kind,—to deliver an invective against them, to arraign their conduct and impugn their judgment, then he grievously misunderstands my purpose, and accuses me of a presumption wholly alien to my character and habits. As one of the humblest of their order, let me bear my testimony to their conspicuous purity and holiness of life. Knowing as they do, that to the vast majority of them the door of ambition is closed for ever—buried as many of them are in the deep obscurity of country parishes to which their noble poverty confines them for long years—surrounded as they often are by an ignorant peasantry and an illiterate society, they do their work calmly, cheerfully, and unremittingly, with a zeal and self-denial which are beyond all praise, and which will receive no reward, and scant encouragement, until they hear those lofty words, “Servant of God, well done.” I should indeed blush if I could bedim one line of that bright and saintly picture which was drawn by Chaucer in the fourteenth, by George Herbert in the seventeenth, and by Goldsmith in the eighteenth century, and which in all times has justified its fidelity. But men may be upright and pure in life, yet intolerant and retrogressive in opinion. St Chas. Borromeo, who visited the plague-stricken with the tenderness of a saint, yet persecuted heretics with the fury of an inquisitor. And, speaking not of the special work of the clergy, but of their speculative opinions—opinions, too, which affect a sphere of knowledge outside of and beyond their own—it must, I fear, be admitted that neither now, nor at any period of the past, have the relations between science and clerical opinion been what they might be. It is my present object to point out the fact, to consider its causes, and to suggest a remedy. I cannot but fear that many alike of my arguments and my suggestions will be in disaccord with the views of my brethren; I do not think that it ought to be so; I do not think that I shall say a word to which *just* exception can be taken; but, if it be an indefinitely easier and more pleasant task to glide down the smooth stream of popular applause, and be carried along by the favoring opinions of an audience, one is often doing a more useful and a more fruitful work when running counter to them. I have written in Hooker’s belief that “things most truly are likewise most behoovingly spoken.” I have been encouraged by the consciousness—first, that I am but re-echoing thoughts and arguments which *might* have been used, and in spirit have been used by Fathers, such as St. Gregory of Nyssa, or Clemens of Alexandria, nay, even by the uncompromising St. Augustine himself;

secondly, that I am speaking to the freedom of Protestants, not to the infallibly-bound reason of Roman Catholics; and, thirdly, that I am addressing the clergy of London—a body who have always been conspicuous among their brethren for liberality and candour. Therefore, I will ask for no indulgence, except the credit of speaking without disguise or equivocation, fearlessly, sincerely, conscientiously, as a clergyman ought to speak; the credit for stating my views respectfully, courteously, without, passion, and without arrogance; and the credit for a sincere desire to further in one important respect the high interests of that great clerical order to which—because of the high ideal of it which I have seen so many of my brethren attain—it is the chief pride and honour of my life that I belong. . . .

By Science we mean demonstrative knowledge respecting the laws and phenomena of the universe; by Religion we mean established facts respecting the relation of God to man. To assert that one can be hostile to the other, is to assert that the God of the universe can be an enemy to the God of the conscience, or that the laws which he has written on the mighty pages of his macrocosm, can give the lie to those which he has inscribed on the heart of humanity, and on the tablets of the moral law. A spurious science, indeed, and a false theology, may often clash their opposing self-complacencies, and truth, in the struggle, may be retarded for centuries. But "*Veritas laborat saepe, extinguitur nunquam.*" On the one side, let there be but a single thinker, striking out some new truth in his solitary cell; and on the other side let there be all the banded forces of prerogative and prejudice—let kings fight against it with their armies, let priests denounce, let synods anathematise, let bishops excommunicate, yet in spite of the evidence of men's senses, in spite of the cruelty of their powers, in spite of the tyranny of their leaders, in spite of the inveteracy of their beliefs, *Magna est veritas, et PRÆVALEBIT.*

Now truth only—fearless of results, indifferent to consequences, established by infinite, humble, self-abnegating toil—is the very domain of Science; and the belief in it, the love of it, and the inquiry after it, furnish mankind with their best and noblest aims. Theologians have delighted to contrast faith and reason, to monopolise the former, and to leave the latter, in all its supposed aberrations, to their opponents. The antithesis should be rejected as mutually injurious, and "altogether unholy." All theology worthy of the name *must* appeal to reason for the very grounds of its acceptance; and all true science soars upon the wings of the very loftiest faith. The faith of Science has removed mountains; the reason of true Theology has outlived all storms. We believe that by the Word of God the heavens and earth were made; we believe that from them his eternal power and Godhead may be known; the pursuit of science is the study of those works, the result of science is their interpretation. How *can* there be any hostility to religion in a body of truths, whose acceptance is the *necessary* result of their apprehension? Religion, in the words of Locke, "is *every* man's duty, and every rational creature is concerned therewith." The divine does not monopolise it, nor can the man of science do without it. Both have the same needs, both the same intellectual and moral hunger, which truth only can satisfy. . . . Read the annals of science, and they will, I fear, furnish abundant evidence—evidence which *we* should be the very

last men to deny—that her children have often been calmer, wiser, greater, better men than the theologians who attacked them. And to the physical student no less than to the divine, God has spoken; the one reads his perfections in the starry heavens above—the other in the moral law within.

But when I say that *Religion* and Science can never come into collision, I do *not say the same of Science and Theology*. For the name of Theology is often usurped to signify a multitude of traditional dogmas, which may be safely excluded from the conception of true religion. . . .

[Speaking of the men of science, and the theologians of the schools who opposed them, he says]—And which of these two has earned God's blessing,—the systematisers who have gyrated in contradictory expositions, or the men of science who have proceeded ever in triumphal progress, pressing forward irresistibly from fruitful discovery to fruitful discovery, "springing from crystal step to crystal step?" While a self-styled theology was but infecting Scripture with its own fallibility, science was revealing God's grandeur in his works, was ever making man's mind more expansive and his life more full of joy. Unaided, and with no weapon save the prerogative of reason, science has many a time torn up and scattered to the winds the dearest prejudices of divines, nullified their haughtiest claims, reversed their most positive assertions, erected towers of adamant amid their ruined walls of untempered mortar. The path of science, no less than that of history, is strewn with the wrecks of their defeated dogmas, and covered with the *débris* of their causeless threats.

If anyone ask what Christianity has done for civilisation, we can answer that it made common, in the practice of mankind, an ideal of holiness, so noble and so saintly, that in all the ages of previous history but one or two attained to it. But if we be asked what *theology* has done, what shall we answer? For a thousand years theology had it all her own way; all learning did homage to it, and all authorities supported it. Theology had to herself the undisputed dominion of the world; and what came of it? Take any history of doctrine, be it Haag or Hagenbach; any history of the Church, be it Giesler or Neander, Milman or Gibbon; and can we honestly admit that a systematizing or polemical theology has performed for the world any appreciable service? Was it not the main task of the Protestant Reformation to overthrow the pernicious dogmas which had been imposed upon men's weary reason by the interminable array of theologians and priests? Was it a satisfactory result for one thousand years of theology to end in quibbling about "notions, and relations, and formalitations, and quiddities, and hæceities which," as Erasmus says, "no eye could follow save that of a lynx, which is said to be able, in the thickest darkness to see things which have no existence?"

It is certain, then, that these ages of undisputed theology were ages of darkness, stationariness, superstition. . . . "The same questions, the same answers," says John of Salisbury, "the same difficulties, the same solutions, sought for, admired, cavilled at, abandoned, repudiated, and again admired." "Behold a school which for five centuries has resounded with disputes," said the pompous cicerone, who showed Casaubon over the Sorbonne. "Et qu'a-ton donc prouvé?" was the very natural—if somewhat ironical—reply.

But the chief characteristic of all that theological age was an intense servility—servility to the mere letter, servility to the Fathers, servility to Councils, servility to Aristotle, servility to all sorts of Doctors, angelic, cherubic, irrefragable, and seraphic. Everybody, originating nothing, was dogmatically commentating on everybody else. The age avowedly borrowed all the supposed truths which it possessed, and forbade anyone to do anything else. Worst of all, it made dissent not only a *necessary* error, but even a civil crime—a crime treated with more atrocity than the most terrible of moral offences. It made “the grave of science a step to the gate of heaven.” If it was difficult to answer those who were not to be silenced by a fragment of Aristotle, it was comparatively easy to imprison or to burn them. An infallible Papacy, an ambitious, ignorant, and immoral Priesthood, an Inquisition which never rested from its work of blood, the doctrine of image worship, the sale of indulgences, fear, distrust, malice, hypocrisy spread over the whole surface of society—these, if we may believe the Church historians, in the fifteenth century had been the nett result of those ages of disputation.

Only by long and slow degrees came the revolt; the insurrection from usurping dogma to indisputable experience; the rebellion against

“Blind Authority beating with his staff
The child that might have led him.”

Against this nightmare that was crushing the reason, against spurious legends, against monkish disputes, against barren logomachy, against Aristotelian commentators, against systematizing exegesis, the free human intellect, illuminated by the spirit of God, began to spring up in indignant antagonism. The armies of glorious insurrection moved always along the road of science. And with what results? These theoretical reformers simply *revolutionized*, and by revolutionizing, redeemed and ennobled the very theology before the golden image of whose ignorance they had refused to bow. They did infinitely more for true theology than had ever been done by the writers who usurped her name, and perishing as the folorn hope of humanity, in the very breach they had made, they purchased by their tortures that intellectual freedom which is the highest birthright of mankind.

The fate of men like Virgilius in the eighth century, and Gerbert in the tenth,—of whom the first was persecuted for asserting the existence of the Antipodes, and the second was laid under an interdict, and cursed as a magician because he was a remarkable discoverer—were only prophecies of what was to come. Next in that noble army of martyrs came Roger Bacon. Roger Bacon was a Domincian monk. Now let me pause here to say that of late some clergymen have thought to prove that theologians have no tendency to persecute science, because some eminent men of science have themselves been ecclesiastics. May I say, without discourtesy, that I cannot pretend to understand the logic of such an argument? By precisely the same argument it might be proved that the clergy were never hostile—not to mention any more modern names—to Wesley, or to Whitfield. That in all ages there has been a few clerics, who, like Copernicus, or Campanella, or Baden Powell, or Professor Sedgwick, have also been physical students, is a mere commonplace; had it not been so—had not

the few in all ages been wiser than the multitude—the very existence of the clergy might ere now have become impossible; but these men have been in general the *suspected exceptions*. One or two of the clergy were among the original promoters of the Royal Society, but it is a mere matter of history that “an overwhelming majority” of them did their utmost to discredit and oppose it. But to urge that such men as Roger Bacon and Campanella were clerics in proof that theology has not been opposed to science, without adding that such men have been the favourite victims of theological fury, is truly to slay the prophets, and then build their sepulchres; to kill the foremost men of their order, and then lay claim to their credit for the justification of their murderers!

For how did Roger Bacon fare at the hands of theologians? Instead of being held in imperishable honour as one who towered with astonishing grandeur above all his contemporaries, that “vulgus studentum,” which, as he said, “non habet unde excitetur ad aliquid dignum et ideo languat et asininat circum male translata,” attacked him with unremitting hate. A clamour arose about him of “magician,” “heretic,” “atheist,” the well-known theological trumpet of internecine war. His books were burnt, his instruments broken, his person confined in cruel custody; he was fed on bread and water, he was starved with compulsory fastings, he was treated, as he himself has told us, with *ineffabilis violentia*. While Thomas Aquinas was schoolasticising, and systematising, and commentating with boundless applause—defending persecution, and settling to his own satisfaction the minutest frivolities about the nature of angels—this great, heroic, unequalled philosopher was being hunted by monks and theologians, into a weary grave, till they wrung from his lips—as they afterwards wrung from the lips of Descartes—the bitter words, that he repented to have done so much in the interests of science and of man. * * * * It has been the fatal tendency of theology in all ages not to *face*, but to *strangle* opposition; to give all independence of thought, even in its own pale, a good set down. It put down Wickliffe; it put down Roscellinus; it put down Abelard; “it put down the Reformation,” says Mr. Mill, “at least twenty times before Luther.” It put down Arnold of Brescia, Fra Dolcino, Savonarola, Jerome of Prague, the Albigeois, the Vaudois, the Lollards, the Hussites. Down to the end of the sixteenth century it was stigmatised as a rationalistic tendency—a belief which made orthodox people shake their heads—to hold the simple opinion that burning one’s opponents was a crime and a mistake. In fact, theology at this period had substituted a ghastly terrorism for manly and faithful inquiry. Not one independent thinker but suffered for it. Columbus was long prevented from discovering the New World, and so conferring on mankind an inestimable blessing, by theological committees who tried to argue him down out of the Psalms and Prophets, nay, even out of Augustine and Lactantius. In 1543, Copernicus, lighting up the universe by a flash of prescient genius, dare not publish his theory save as a mere hypothesis, and, in fear, as he himself says, of vain babblers, who perversely wrested scripture against him, delayed his book so long as only to receive a copy on the day of his death. In 1563, Telesio, though he prostrated himself abjectly before the clerical majority, had his work forbidden and suppressed. Vesalius, the anatomist, sent by the Inquisi-

tion on a penal pilgrimage to Jerusalem, died of starvation on an island where he was shipwrecked. Campanella, "accused of rebellion and heresy," for his physical doctrines, was fifty times imprisoned, and seven times unspeakably tortured. Peter Ramus, rejecting the ecclesiastically established dialects of Aristotle, was condemned by a decree of the Sorbonne, as "rash, impudent, ignorant, and arrogant;" and was murdered by the infuriated scholars of a rival professor. Vanini was burnt at Toulouse, on a false charge of atheism. And in the very first year of the seventeenth century the brave and fearless Giordano Bruno was burnt to death in the Roman forum; and "that the stars are seen shining by their own light, and that each has its revolving planets," were among the enormous paradoxes and capital offences which were laid to his charge. Well may the historian of the Inductive Sciences observe, that "*it is impossible not to be struck by the series of misfortunes which assailed the theoretical reformers*" during this long period.

But these martyrs of science perished not in vain. By slow degrees their deaths and sufferings were emancipating men from those false and cruel bonds which were forced upon men's minds by an ignorant intolerance. For the seventeenth century was the century of Galileo Galilei, whose name shines out among the very brightest benefactors of humanity, and whose sentence should have been written *in terrorem* before all those divines who, to use the words of Bishop Jeremy Taylor, have been "fools upon record, by hastily condemning what they slowly understood."

From the day when Galileo, a boy of eighteen, discovered the isochronism of the pendulum, as he watched the great bronze lamp swinging in the cathedral of Pisa, to that supreme moment in the history of humanity, when the satellites of Jupiter swam into the focus of his rude telescope, his life was one long series of splendid triumphs, for which no gratitude was adequate, for which no honours were excessive, which no gold could pay. He "enlarged the universe one thousand times beyond the belief of past ages;" in the words of Castelli, "he saw more than all who had gone before him, and opened the eyes of all who were to come." To bring home to us the idea of Infinitude, to add to the conception of Divine power a magnificence which no imagination of theology could have illustrated,—this was God's revelation through the genius of Galileo. And what was his reward? To be harried by the clergy at every step, to be charged with pride of human reason, to have his divine discoveries censured as diabolical illusions, to be branded as an infidel, and a rationalist, because of a false theological tenet—this was his fate. The old man of seventy, broken with sickness and infirmity, after rigorous examination, which some believe to have been the torture of the cord, clad in a scanty shirt, terrified by a merciless tribunal, was compelled, as an examined and confessed criminal, to *abjure, curse, and detest upon his knees, as contrary to Scripture, philosophically false, and formally heretical*, the inestimable discoveries of a most glorious life. His books were burnt and prohibited; he was consigned to a prison; he was ordered once a week for three years, to recite the seven Penitential Psalms; his will was disputed; his monument denied; his right to be buried in consecrated soil barely granted; and the family confessor was permitted to burn all that he considered

objectionable, which was in all probability all that was most new and valuable, in his remaining MSS!

Such was one of the many crimes of theology against science,—a crime for which theology has not duly repented, but for which humanity itself “should mourn in sackcloth and ashes.” Is there in all history a spectacle more terribly disgraceful . . . than this of religion arraying her awful sanctions and sacred energies in the very van of retrogression and falsehood? I say that theology has not repented, because theologians still extenuate the crime, and commit others like it. . . .

But it has been the fashion to say of late that Galileo would have escaped if he had but shown “a decent duplicity” in “formulating” his opinions. Thank God he did not! and would that theologians in this respect would imitate him! *What physicists and divines have alike got to do is to see truth as clearly, and to state it as unmistakeably as they possibly can*; and if I shall not be beheaded or imprisoned for reading this paper, I owe it in part to the fact that Galileo, with his burning love of honesty and intense abhorrence of spiritual despotism, disdained to juggle with the majesty of truth. The duty of a scientific man is to inquire, and not to formulate, to arrive at what is granted him to see and to demonstrate, not to consider the bearing of it on this or that saying of Isaiah or St. James. He, too, is studying a great Book of God, which requires an intense truthfulness in him who studies it. Nothing has ever come of an attempt to construct a Biblical Science; the Bible, as Hugh Millar said—than whom no man ever loved or revered it more—has never led to the discovery of a single scientific truth; and the attempt to use it as a handbook of science has ended in nothing but mischief. It led to the assertion by Ambrose of **a solid heaven**; it led to the denial by Augustine, and hosts of other fathers, of the Antipodes; it led to the confident vagaries of Cosmas Indicopleustes; it entangled Tycho Brahe all his life in an erroneous hypothesis; it led to the “New theory of the Earth” of Whiston, and the “Turris Babeli” of Hooke,—and the many portentous physical suggestions of a crowd of modern pamphleteers. It was by independent truthfulness, no less than by transcendent genius, that Galileo won the first battle in the long strife between pseudo-religious ignorance and real scientific knowledge. In his case the edge of the theological axe was dashed on iron, and since then, however vigorously wielded, it has barely been able to cut wood.

Time forbids me from giving any continuity to this brief outline, by showing how nearly *all* great discoverers have been similarly persecuted—how Kepler was excommunicated, his library sealed up, his books put in the Index, his safety only secured by imperial protection; how Descartes found among theologians his bitterest persecutors, and was fined, worried, embittered, and charged with atheism, after exhausting his genius in the demonstration of a God; how Pyrerius, though a profound believer in revelation, yet because he tried to deduce from the Bible a plurality of races, had his room entered by armed men, his book burned, the continuation of it prevented, and himself imprisoned until forced by terror to recant. But so the guilty and miserable tale goes on. The great men were crushed by persecution, and the thousands whose silent thoughts they represented were forced into lifelong dissimulation and remorseful graves.

But perhaps you will say, "We are not Romanists." Alas! the sin lies at the door of *theologians*, and of Protestant theologians hardly less than Papist. The terribly mistaken and suicidal duty of coercing heretics was preached as strongly by the one as by the other. If Rome burned Savonarola, Geneva burned Servetus. If Serenus accused Galileo, Voetius worried Descartes. If Roman Catholicism warred with the Vandois, Protestants persecuted the Anabaptists. Luther stormed against the impiety of the Copernican hypothesis no less violently than Caccini. If the Jesuits opposed the Lyncean Academy, the English clergy disliked and thwarted the Royal Society. It was the Protestant Aconcio who said that "if the clergy once got the upper hand, all knots would be cut by the knife of the executioner." Not to Luther, or Beza, or Knox, or Cranmer, or Melancthon—for these men all approved of what they little recognised to be the *crime* of murder for "heretical" opinion—but, unfortunately, to Socinus and to Castellio we owe the first assertion of the doctrine of toleration; and for preaching it they were, on supposed Scriptural grounds, denounced by Beza as the emissaries of Satan, and Castellio, pursued by the furious hatred of Calvin, is said to have died of absolute starvation. . . .

But once more you will say "These have been our sins in the past only; we are not intolerant or persecutors now." We are *impotent* now, but we often show ourselves just as angry. We have lost the power to persecute, we still show the will to annoy. Publicly we do not (often) excommunicate, but socially we ban. We do not brand with hot irons, but many of us sear men's lives with social stigmas. Be it observed, I am not now speaking of the truth or falsehood of certain opinions, but solely of the manner in which we still treat opinions hostile to our own. In this very age, in this very generation, we have seen exhibitions of theological intolerance as disgraceful in spirit as those of the Inquisition. We have seen learned and honest men denounced, deposed, excommunicated, reduced to poverty, and treated like social pariahs. From pulpit and platform, as in the days of Priestley, we have seen men of science held up in theological discourses to the hatred of an unreasoning mob. We have seen discovery after discovery treated at first as an insult to verbal inspiration, though afterwards it was unhesitatingly accepted. We still unhappily live in an age of persecutions, prosecutions, deprivations, excommunications, ejections for mere differences of theoretical opinion on matters of Biblical exegesis. And one consequence is that on almost all subjects there is perhaps less of defined and independent thought in England than in any country of the world. Charges of neology, charges of rationalism, charges of scepticism, charges of heresy, in pulpits, and pamphlets, and religious periodicals are everlastingly ringing in our ears.

For what, very briefly, have been the main new sciences of this generation which can by any possibility intersect the orbit of theology? They are of course geology, ethnology, pre-historic archaeology, physiology in some of its branches, and the science of language. Is it possible for any one familiar with the contemporary literature of this century, to deny that every one of those has been ushered in with a burst of clerical opposition? If any one does deny it, I ask him, in the name of common candour, to read the published sermons and pamphlets and newspaper articles of every school, of which he may see thou-

sands at the British Museum. A friend of mine, before whom they come officially, writes to me that "the mass of theological literature coming before me *abounds* in proofs of the suspicion and antipathy with which scientific inquiries are regarded by great masses of the clergy." Geology occupies in this generation an analogous position to that once occupied by astronomy; it has revealed to us infinite time peopled by myriads of existences, as astronomy revealed infinite space peopled by myriads of worlds. And how was it received? With excited oratory, with savage denunciation. Dean Buckland and Professor Sedgwick were clergymen, but how were they treated? You cannot deny—for the proofs are patent to every one—that they, and that all the early geologists, were met with a storm of invective. "What was God doing before the first of the six days of creation?" asks the clerical and university author of "Popular Geology Subversive of Divine Religion," and he answers the question to his own satisfaction. "He was decreeing from everlasting a hell for all infidel inquirers." If we turn to archæology, we find M. Boncher de Perthes attributing to theological prepossessions his inability for many years to obtain any hearing for his interesting discoveries. In the science of language we still find clergymen inculcating from the pulpit on scriptural grounds the ridiculous and exploded hypothesis that all languages are derived from the Hebrew; and we find the belief in its natural origin distinctly characterized as "a materialistic and atheistic hypothesis."

In the records of ethnology we find the gentle and illustrious Dr. Morton worried to death by the attacks of a clerical opponent; and we find a man so learned and eminent as Dr. Pusey, conscious as he is of past experience, laying down at the Norwich Congress as *matters of faith*—matters which the Bible has decided, and which no science can overthrow—propositions rejected by such an immense number of scientific men as these two, that mankind originated in a single pair, and that only eight people were saved with Noah in the Ark. Respecting the opinions themselves I need give no opinion, but respecting the utter unwisdom of staking the whole credit of religion on the support of such hypothesis, after the proved and utter fallibility of our scriptural interpretations in so many other matters, I say that it is most perilous; I say that it demonstrates how little as a body we have yet learnt the very *simple* truth that SCIENCE CAN BE REFUTED BY SCIENCE ONLY, and how little right we have to smile at the fulminations of the Vatican, while our own methods and proceedings are in spirit so much the same. Let us take, by way of example, the celebrated Darwinian hypothesis. From one very small point of view—the ethnological—I have, in the Transactions of the Ethnological Society, myself ventured to state some reasons why I think it is not demonstrable, and that there are powerful arguments on the other side. But no man can deny that it is a most brilliant and fruitful hypothesis; that it has exercised a splendid influence over modern science; that it explains many remarkable facts and series of facts hitherto deemed inexplicable; that it was supported with a genius, a patience, a calmness, and a dignity which made its author a very needful and a very noble example to its assailants; and that the name of Charles Darwin, though it is the reverse of acceptable to the majority of the clergy, stands perhaps the very highest in the enthusiastic love, and honour, and reverence of scientific men. Yet how was the hypothesis received? We know how it was received at Oxford;

we know that the pulpits, not of England only, but of Europe, rang with denunciation of it as subversive of all Scripture, of all morality, and of the dignity of man; and I have myself heard it thundered forth before an enormous meeting by an excited and most influential clergyman, that if there had been any development it was not from the ape to the man, but retrogressive from the man to the ape in the persons of those who supported such a view! Very recently indeed there has been a stand made against these deplorable and dangerous methods of arguments. Two clergymen, at least, at the Wolverhampton Congress had the courage and good sense to admit—as even Archbishop Sumner admitted long ago—that there are and must be irreconcilable discrepancies between science and the mere letter of Scripture; one of them, without being silenced, actually ventured, without anger or discourtesy, to express some limited approval of the hated name of the bishop of Natal. But what then happened? The most distinguished leader, the most popular favourite of the whole body got up, and carrying with him, as he himself asserts, the sympathies of the vast majority, declared, amid loud cheers—“that in the name of all humble believers be repudiated the claims of science to have an equal right with God’s Bible to lay the foundation of truth—that those who receive the Bible *do not investigate truth: they receive it*. He really could not part from the meeting without delivering his humble protest against the equal claim of science to our reverence, as if we had all *to look for* the truth, as if we had not already received it.” Now as far as this language had any meaning—and for its meaning you must read the speeches which it was intended to repudiate—I say that it asserts the right of theologians to be the judges of scientific conclusions, and that it might have been delivered equally well in the Sorbonne—before the board of theologians who sat upon Columbus—or at the conclave of cardinals that humbled Galileo. And this speech was received with loud cheers, and is asserted to have represented beyond all question the sense of the meeting.

Now much more remains to be said, which would all tend, I think, to prove the position from which I started, that the relations of the clergy to science—which I most gladly and thankfully admit have improved of late, and are gradually improving—are not yet satisfactory. But I will conclude by laying down three positions, which I fear will be rejected by many of my brethren, but with respect to which I am ready to appeal to every scientific man of note in England, whether peace and union between science and theology is even possible without their frank admission. It has been said that the leading clergy are eager—are painfully anxious for peace on the matter, at any price. Will they agree with me in accepting the conditions on which alone a peace is possible?

Firstly, then we must give up our schemes of reconciliation, of squaring our Biblical interpretations into modern scientific moulds, of making the words of the Bible bear all kinds of non-natural senses, and mean what they never have meant, and never by any possibility could have meant. I declare unhesitatingly that such Biblicising as that found in Gaussen’s “Theopneustia,” and hosts of modern pamphlets, tends as powerfully to alienate men of science from the Bible, as it tends to revolt the consciences of many of the clergy themselves. The Protestant endeavour “to bend Scripture to fact” is hardly less futile than was that of the Romanist “to bend fact to Scripture.” To interpolate any number of thousands of years between two consecutive verses, and imply that the writer may have in-

tended it; to twist the plainest ~~prosaic~~ statements into vision, allegory, poetry, metaphor, or anything in the world in one place, yet indignantly to refuse all right to do so in another; to say, when the Bible uses every conceivable variety of phrase to imply universality, that these are only Hebraic metonymies for something partial; to interpret, as in a recent book on language, the story of Babel to imply the gradual growth of three families of language; to argue that when man is said to be made of the dust of the earth, "dust of the earth" was intended to mean oxygen, hydrogen, and carbon; to take a chance allusion in Solomon as a direct prophecy of the theory of the winds; and to make a chance expression in Job a proleptic allusion to the rotation of the solar system round the star Alcyone;—all this is a style of argumentation which, although it may be loudly applauded at party gatherings, can never be accepted as satisfactory by many plain and conscientious minds. To me, at any rate, it looks like "lying for God," while all the while we are fighting against him; and I echo the gratitude of Professor Maurice, when he says that "it is a blessing that the faith of scientific men in the Bible has not wholly perished, when they see how small *our* faith is, and by what *tricks* we are sustaining it.

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Secondly, I say that we must deliberately abandon that disastrous doctrine of Scriptural infallibility in scientific matters—that degrading idolatry of the dead letter—that doctrine of "verbal inspiration," as it is called, which leads, as Bunsen says, to fetichism in worship, to untruth in philosophy, and to unreality in religious thought. . . . It is a doctrine which may be refuted by the plainest and most cogent arguments, alike literary, moral, and historical. It is a doctrine which has been pregnant with deep disasters; it has been the barrier to science, the bane of ethics, and the curse of theology. If it be the worst error of the Roman system that it thrusts priests, and churches, and saints between the soul and God, it has been the error of many Protestant sects that they have placed the utterances of a book between man and his Heavenly Father, with whom, as the book itself teaches us, we all live, or ought to live, in direct, immediate, living, personal communion. It substitutes formal dogmas for the progressive, incessant, permanent revelation of the Creator in all his works, and in all his ways, to the spirit of every individual man. By the fruits of this doctrine you shall know it. The sacred book is the most precious boon which God ever gave to man; but to this perversion and misuse of it we owe every error of judgment and cruelty of action of which we have spoken this evening. To it we owe the defence of slavery. To it we owe the fight for "passive obedience." To it we owe the degrading doctrine of "the right divine of kings to govern wrong." To it we owe that crime, which has been preached as a duty, the murder or persecution of our opponents for their theological opinions. To it we owe the burning of witches. To it we owe the theory of polygamy. There is hardly a tyranny of kings or priests—hardly an error in sociology or science—which has not appealed to it, or relied on it. They were divine lips that told us that *the letter killeth*. From it have flowed forth, as from a fountain, the turbid streams of falsehood in science, and injustice in conduct—the disturbed consciences of the many, and the terror-stricken faith of the few. If this truth is to be generally held by the clergy, if it is to be made part and parcel of our theology, if it be thought that any youthful and perhaps ignorant clergyman may refute the most veteran man of science, by

quoting against him the literal meaning of some Scripture text, then there must long continue to be an opposition between the clergy and science, even if there does not come, sooner or later, an overwhelming catastrophe to our national religion. And if there be a conflict between the clergy and science, can anyone read history and doubt which will win? After centuries of conflict the Church, when she has thus mistaken her mission, cannot claim a single victory. Every burning, every false imprisonment, every persecution, every calumny, every falsely-attached stigma of infidelity, every text impressed into the service of error, every attempt to kindle in the supposed cause of religion the blind excitement of the half-educated mob, has only rebounded with tenfold force upon those that have used them—not demolishing the antagonistic discovery, but only giving it fresh vigour and fresh impetuosity after it has overwhelmed the barrier of a momentary existence.

Then thirdly and lastly, I say that we *must* take humbler ground. In this age, sacerdotalism, priestcraft, theological assumption, are a dangerous anachronism. Men of science deprecate our opposition, but they will certainly dislike our patronage. They claim with us an honourable friendship, a mutual confidence. A knowledge of divine things is, thank God, very far indeed from being an exclusive patrimony of the clergy. Scientific men, for the most part, have shown themselves quite as well acquainted with anything which can be called theology—ay, even with technical theology—as nine tenths of the clergy themselves. Science is *constantly* performing great services to true religion, but it is only in a very limited and rhetorical sense that the sciences can now be called the handmaids of theology. A speaker at a recent Church Congress said, “that though they may fly from her, and lose themselves for a time in the dark wilderness of atheistic speculation, they must in the end return to their mistress and submit themselves to her hand.” If this means that the clergy are to legislate for the men of science in their own sphere, it is not true; and if it only means that truth must always redound to the knowledge and glory of God, it is at least expressed in a confused and declamatory manner, which is, alas! but too common among us. Again and again I say that, if theology be only a true interpretation of the revelations of God, then *Science is itself one of the noblest forms of Theology*. It has deepened indefinitely our sense of the mysteries around us; it is the reading of that world which even Plato himself called “God’s epistle to man;” and which Campanella said was God’s primary autograph;” and which Galileo described as “a great book ever lying open before our eyes, but which cannot be understood until we first know the language and learn the characters in which it is written.” Once more I must say that God, by the discoveries of science has revealed to us more fresh truth respecting His own glory than all theology has declared for us since the last of the apostles. The infinitude of space which He inhabits,—the infinitude of time in which He works,—the majestic onward flow of His mighty laws, “in the uninterrupted rhythm of cause and effect,”—the long reign of physical dissolution over untold myriads of vanished organisms,—the infinite physical insignificance of the little planet we inhabit in the illimitable cosmos of suns and systems,—the fact that in that little orb we occupy but a thin pellicle of air over a thin film of earth, being but “the last holders of a precarious lease in an ancient tenement,”—all these truths about God and about ourselves, which at once dilate the strong conception

of the Divine with so kindling a majesty, and dwarf the pride of the human with so crushing a dominion,—have been revealed to us, not by Fathers, not by schoolmen, not by commentators on the Old or New Testament, but by the hopeful, patient, resolute students of the works of God's hands. These men it is who have unclenched from the granite hand of Nature her magnificent secrets. These men, in their search for truth, have, with sheer labour, "climbed by these sunbeams to the Father of lights." And are we the clergy to deny such lessons of God's works? Are we to put out the eyes of these men? Are we to bid *them*, who have been so long our teachers, to sit, forsooth, at our feet, and listen while by the light of our imperfect and often-blundering exegesis, we lay down the law to them on their own subjects, and order them to shape their conclusions thus or thus? Are we to tell them that, because of our very limited views of interpretation, this or that casual allusion of Isaiah or of Genesis is to be a final refutation of all their theories,—is to be as the "*flammanitia mœnia mundi*," which they cannot and dare not over-leap? Are *we*, of all the people in the world, to bid them abandon that noble, dauntless, burning love of truth which gives shapes to the purposes, and hopefulness to the struggles of an earnest though perplexed generation? Or rather shall we not—in obedience to that pointed finger of heaven which we see in all history—lay aside, at once and for ever in all matters of science, our old assumptious style of "*Non Ego, sed Dominus*,"—bound, as it was, "by the thunder and denunciation of curses and anathemas,"—and adopt in lieu of it the infinitely humbler, truer, and grander tone of the great Apostle of the Gentiles,—"*secundum consilium meum*,"—and "*Ego, non Dominus*?"

I have said my say. I have said it in all sincerity and humility. I trust that I have said it without offence. At any rate, in saying it, I have shown my confidence in the fairness of my audience, and my belief that they will possess that freedom and fearlessness of mind without which no search for truth can ever be successful. And although there may be some who may find it convenient to misrepresent my words as being disparaging to the Bible, I say that I have spoken in the deepest reverence for it. We do *not* honour the Bible,—nay, we embase and dishonour it by constantly running with hands outstretched and cries of terror to uphold what we, in our faithlessness, may regard as its tottering ark. I reverence the Bible too truly to take it for a manual of natural science; and to think that it needs such puny and such questionable aid. "*Deorum injuriæ Dis curæ*," and if we really *believed* the Bible to be scientifically infallible, *we should not go peeping about for people's heresies against it*; nor should we show all this alarm and sedulity in squaring and posting up its mere *obiter dicta* into some simulacrum of coincidence with the last conviction or discovery of scientific men. The mere *natural* science of the Bible is the natural science of its writers; and they were men of a country the most scientifically ignorant in a scientifically-ignorant age.